The Syntax and Semantics of Manner Modification: Adjectives and Adverbs

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Contents

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Notation conventions

Logical notation

$\wedge$	conjunction
$\vee$	disjunction
$\subset$	proper subset relation
$>$	greater-than relation
$\prec$	temporal precedence
$\circ$	temporal overlap
$\in$	is an element of
$\sim$	truth-conditional equivalence
$\rightsquigarrow$	type shift
$\gg$	has scope over

Type-theoretic notation

	type	variables	
truth values	t		
individuals	e	$x, y, z, ...$	(singular)
		$\mathfrak{X}, \mathfrak{Y}, \mathfrak{Z}, ...$	(plural)
events	v	$e, e', e'', ...$	(singular)
		$\mathcal{E}, \mathcal{E}', \mathcal{E}'', ...$	(plural)
degrees	d	$d, d', d'', ...$	
times	i	$t, t', t'', ...$	
manners	m	$m, m', m'', ...$	
worlds	s	$w, w', w'', ...$	
entities	ε	$\varepsilon, \varepsilon', \varepsilon'', ...$	

CHAPTER 1

Introduction

This thesis is concerned with the syntax and semantics of both adverbial and adjectival manner modification. Section 1.1 below will introduce the main challenges that manner adverbs and adjectives pose for a semantic and syntactic analysis, thus outlining the scope of inquiry of this dissertation. The core of the analysis proposed in the thesis will then be briefly presented in section 1.2, in parallel with a description of the organization of the thesis. Finally, section 1.3 will sketch the key background assumptions concerning syntax and semantics which this thesis builds upon.

1.1 Object of study and scope of inquiry

A peculiarity of manner adjectives is that they can occur in a number of different semantico-syntactic environments, illustrated in (1.1) and (1.2) below.

(1.1) a. The way John drives
b. John's driving
c. This driver
} is careful.

(1.2) John drives carefully/in a careful way.

The examples in (1.1) show that manner adjectives can modify or be predicated of nominals of different semantic types. More specifically, they

are equally compatible with what I will refer to throughout this thesis as **manner(-denoting)**, **event(-denoting)**, and **individual(-denoting)** nominals, as in *careful way of driving*, *careful driving*, and *careful driver*, respectively. This fact raises the question of the semantics of manner adjectives, because it is not immediately clear what they denote: properties of manners, events, individuals, or something else.

Moreover, (1.2) shows that manner adjectives also appear as the base adjectives of manner adverbs formed with *–ly*, as well as in the structure of prepositional manner adverbials of the form *in a(n) A way*. This poses a further challenge for a theory of manner modification: It should be able to derive the semantics of manner adverb(ial)s based on the semantics of the corresponding adjectives; in other words, to provide a unified account of adjectival and adverbial manner modification.

As far as manner adverbs, such as *carefully*, are concerned, it is fairly standard to assume, following Reichenbach (1947) and Davidson (1967), that they are co-predicated of the event variable introduced by the main verb. More precisely, the denotation of a manner adverb is usually taken to be the event predicate corresponding to the respective adjective, such that, for instance, *carefully* contributes the property of events **careful** to logical form. In other words, the suffix *–ly* is assumed to be semantically insignificant, and its presence is simply ignored.

This event-semantic analysis, according to which manner adverbs and their adjectival counterparts have identical denotations of predicates over events, covers, in addition to manner adverbs, manner adjectives applied to event nouns, as in (1.1b) above. However, it cannot straightforwardly account for cases involving manner nominals and individual nominals, as in (1.1a) and (1.1c). Thus, even if it is on the right track, the analysis in terms of predicates of events cannot be the entire story, unless, of course, manner adjectives are simply assumed to be ambiguous across their uses with individual, event, and manner nouns—hardly an adequate approach in the light of the obvious relatedness between their meanings on all the three uses.

This thesis aims to develop a theory of manner modification that accounts for the issues raised above while keeping the semantics of manner adjectives constant across their uses. In particular, it will be argued that manner adjectives denote properties of manners of events, rather than of events themselves. This means that their occurrences with manner nominals, as in (1.1a), present in fact the most transparent syntax–semantics mapping, whereas their occurrences with event and individual nominals, illustrated in (1.1b) and (1.1c), involve mismatches between overt syntax

and logical form. Accordingly, it will be shown in the course of the thesis (i) how the manners specified by manner adjectives are formally "linked" to the events introduced by event nouns, and (ii) where the events whose manners are specified by manner adjectives come from in the context of individual nouns. Finally, also the base adjectives of manner adverbs will be analyzed in terms of properties of manners. Accordingly, even though manner adverbs as a whole will be standardly assumed to denote properties of events, their semantic structure will be argued to be more complex than just the predicates contributed by the base adjectives. Importantly, this more complex semantics will also be motivated on (morpho)syntactic grounds, insofar as *–ly* adverbs will be shown to have a complex internal structure of null-headed PPs; as a result, both the syntactic function and the semantic contribution of the morpheme *–ly* will be accounted for.

In section 1.2 below, the main elements of the proposal made in this thesis will be outlined in some more detail. Before, however, let me first define more precisely the scope of the thesis, and also indicate what will not be addressed in it.

First of all, let us define what is a manner adjective/adverb. I will use prepositional adverbials of the form ***in a(n) A manner/way/fashion*** as a diagnostic for belonging to this class, as formulated below.

(1.3) An adjective *A* is a **manner adjective** if it can occur in a PP adverbial of the form *in a(n) A manner/way/fashion*.

An adverb *A-ly* is a **manner adverb** if it can be paraphrased as a PP adverbial of the form *in a(n) A manner/way/fashion*.

Accordingly, (1.4) lists some examples of common manner adjectives, or, more precisely, adjectives that have manner *readings*.[1]

(1.4) *active*, *brave*, *careful*, *clear*, *clever*, *clumsy*, *consistent*, *diplomatic*, *fair*, *fast*, *good*, *just*, *loud*, *passionate*, *patient*, *polite*, *quick*, *quiet*, *rude*, *skillful*, *slow*, *tactful*, *violent*

However, this dissertation will not be concerned with the entire class of manner adjectives/adverbs, but only with a subset of it, namely, with

[1] Adjectives such as *good* and *skillful* are sometimes put into a separate category of *evaluative* adjectives, different from that of manner adjectives (see, e.g., Asher, 2011); however, I will not make this distinction. Note also that I will avoid using *beautiful* in examples (except in examples from other authors): Although it has a manner reading, it is idiosyncratic in a number of respects; e.g., it does not easily allow for the manner reading in the predicative position and, importantly, it does not take *at/in*-gerunds.

what I will refer to as **agent-oriented** manner adjectives/adverbs, such as *careful* in *careful driver*, *skillful* in *skillful teacher*, *fast* in *fast runner*, and the corresponding adverbs (note that in fact all the adjectives listed in (1.4) above are agent-oriented). The term 'agent-oriented' reflects the fact that the referential argument of the modified noun of such an adjective is the *agent* in some implicit event whose manner is specified by the adjective.[2] Manner adjectives of this variety have several special properties that they do not share with other manner adjectives. First, they can take gerundive PPs headed by *at* or *in*, which I will call '*at*/*in*-gerunds' (cf. *skillful at teaching*). Second, when they are transformed into manner adverbs, the adverb occurs in an *active* sentence which has the modified noun of the adjective in the subject position (cf. *skillful teacher* ∼ *teacher who teaches skillfully*). These properties distinguish agent-oriented manner adjectives from the rest of manner adjectives, most importantly from theme-oriented manner adjectives like *easy* in *easy text* or *comfortable* in *comfortable chair*, which take *to*-infinitives and can be transformed into manner adverbs that occur in *middles*. Thus, this thesis will be concerned only with agent-oriented manner adjectives and adverbs, even though its main claims hold in fact for other sub-classes as well (for a discussion of various thematic orientations, see, e.g., Platt & Platt, 1972).

Finally, let me also point out the aspects of manner modification that will not be dealt with in this thesis. First, I will not discuss the question of whether manner modification of **states** is possible (see, e.g., G. Katz, 2000, 2008; Mittwoch, 2005; Maienborn, 2007, for a discussion) and will, therefore, only use non-stative predicates. Second, it is outside the scope of this thesis to address the issue of **scope-taking** manner adverbs (see, e.g., Piñón, 2007; M. Schäfer, 2008; cf. section 3.2.2). Third, I will not be concerned with the so-called **clausal** readings that such manner adverbs as *carefully* or *stupidly* have (see, e.g., Jackendoff, 1972; Wyner, 2008).

1.2 Core proposal and thesis organization

This section briefly outlines the main elements of the analysis of manner modification developed in this thesis. It does so on a chapter-by-chapter

[2] So-called *agentive*/*agent-specific*/*agent-sensitive*/*agent-oriented*/*subject-oriented* adverbs, which are often discussed in the literature, are similar to agent-oriented adverbs in the sense of this thesis, but are usually understood as adverbs that somehow invoke properties of the agent (cf. Fellbaum, 1986; Wyner, 1998; Lekakou, 2005). Note furthermore that my agent-oriented and theme-oriented manner adjectives correspond to A_3's and A_4's in Vendler (1963, 1968), cf. section 2.2.1.

basis so as to also provide in parallel a description of the organization of the thesis.

Chapter 2: Towards a manner-based semantics The goal of this chapter is to provide a historical overview of approaches to the semantics of manner adjectives and manner adverbs. It will first present M. Siegel's (1976) theory of manner adjectives as intensional predicate modifiers and point out its inadequacies and shortcomings. Next, it will discuss a family of analyses which assume that, rather than being modifiers of intensions, manner adjectives are modifiers of implicit events that are present in the semantics (Croft, 1984; Larson, 1998; Egg, 2008; Winter & Zwarts, 2012; Pustejovsky, 1995; Asher, 2011). The strength of these eventive accounts is that they provide a unification in the analysis of manner adjectives and manner adverbs, since the latter are also standardly treated as predicates of events. However, what is problematic for these accounts is the issue of the source of the implicit event: While most of them hold that the event is provided by the semantics of the modified nouns of manner adjectives, this chapter will show that this view is difficult to maintain under standard semantic and syntactic assumptions. Moreover, it will then be argued that in fact an analysis of manner adjectives in terms of event predicates falls short of accounting for a number of data and that manner adjectives should be analyzed as predicates of manners of events—and not of events themselves. Accordingly, manner adverbs will be suggested to have complex semantics which incorporates a predicate of manners along with the manner function and manner quantifier. Thus, the denotations of manner adjectives and adverbs will be analyzed throughout this thesis as shown below (ignoring gradability).

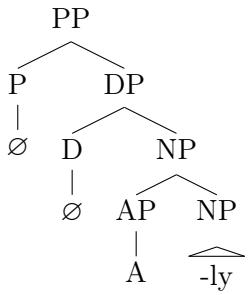
(1.5) $[\![\text{A}]\!] = \lambda m.\mathbf{A}(m)$ $\langle m, t\rangle$

(1.6) $[\![\text{A-ly}]\!] = \lambda e.\exists m\ [\mathbf{manner}(m)(e) \wedge \mathbf{A}(m)]$ $\langle v, t\rangle$

Chapter 3: The syntax and semantics of manner adverbs This chapter will be concerned with the internal structure, the compositional semantics, as well as the syntax of manner adverbs. It will first be shown that there are reasons to believe that the morpheme *–ly* is in fact neither a derivational nor an inflectional suffix, as usually assumed, but rather a nominal root. Based on this, *–ly* adverbs as a whole will be suggested to be null-headed compound PPs rather than members of a separate lexical category or positional variants of a single major category of adverbs and

adjectives. The morphosyntax of *–ly* adverbs will thus be proposed to be as shown below.

(1.7)



Moreover, given the proposed analysis of *–ly* adverbs, depicted above, the semantics of manner adverbs which is argued for earlier in chapter 2 becomes compositional. In particular, the manner predicate is introduced by the base adjective, the manner quantifier by the null D head, and the manner function by the null P head.

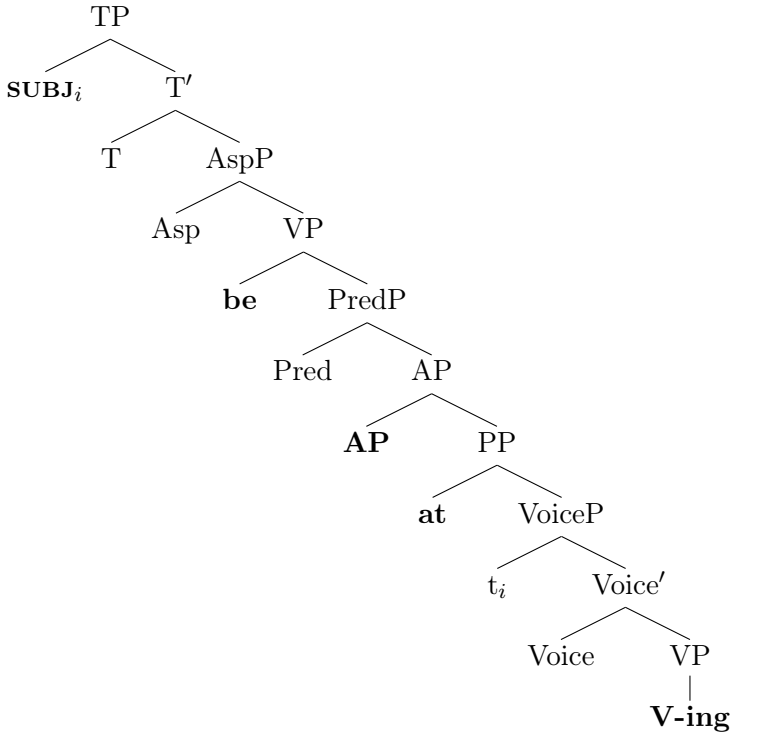
Finally, concerning the syntax of manner adverbs, it will be proposed that they are base-generated as right adjuncts to VP, but can also move to [Spec,AspP] for weight or information-structural reasons, which yields their post-verbal and pre-verbal placement, respectively.

Chapter 4: Manner adjectives across noun types The aim of this chapter is to analyze adjectival manner modification of event and individual nouns. In regard to event nouns, the main question is how they semantically combine with manner adjectives, given that the former denote properties of events (type $\langle v, t\rangle$), while the latter—properties of manners (type $\langle m, t\rangle$), and, thus, direct semantic composition is not possible. Two ways to resolve this mismatch will be considered, namely, a syntactic and a semantic one. On the one hand, it may be assumed that (pre-nominal) manner adjectives are not base-generated as adjuncts to event nouns and thus do not directly combine with them semantically, but rather move to this position out of the structure of post-nominal manner adverbs, where they enter the semantic composition in a straightforward fashion. On the other hand, it may be assumed that in the presence of event nouns manner adjectives undergo a type shift to properties of events, which enables semantic composition, keeping the syntax close to surface structure. The chapter discusses arguments for and against these two approaches.

In regard to adjectival manner modification of individual nouns, the central question that must be addressed concerns the source of the modi-

fied event. It will be argued at length in chapter 2 that the relevant event cannot come from the semantic structure of the modified nouns. In turn, chapter 4 will present arguments that it is contributed by the semantics of (overt or covert) *at*/*in*-gerunds. Thus, the internal structure of *at*/*in*-gerunds will be considered, and it will be shown that they contain verbal projections up to VoiceP and lack nominal layers. The presence of VoiceP implies that the external argument is licensed in its specifier position; yet it cannot receive Case inside the gerund. Therefore, it will be suggested that individual-denoting subjects of predicative manner adjectives are in fact generated in [Spec,VoiceP] of *at*/*in*-gerunds, but raise to the matrix subject position for reasons of Case, as shown below.

(1.8)



This analysis allows a straightforward semantic composition, because the subjects of predicate manner adjectives are generated and interpreted elsewhere than in their surface position, in which they would not be able to combine with manner adjectives. Furthermore, it also accounts for the properties of manner adjectives in the context of individual nouns which are discussed in chapter 2, viz., substitution failure, interpretative variability, and the impossibility of coordination with intersective adjectives.

Finally, manner adjectives that modify individual nouns attributively will be suggested to be reduced relative clauses with the adjective in the predicate position, rather than AP-adjuncts to NP. Hence, their analysis essentially comes down to the analysis of predicative manner adjectives.

1.3 Basic underlying assumptions

1.3.1 Verbal predication

Syntax Following common practice in syntactic theory to "externalize" the external argument, I assume that it is base-generated in the specifier position of a functional projection located above the lexical VP (cf., e.g., Bowers, 1993; Chomsky, 1995; Kratzer, 1996; Collins, 1997, for proposals along these lines). In this thesis, this functional projection will be called VoiceP, as dubbed by Kratzer (1996).[3] Being generated in [Spec,VoiceP], the external argument DP moves to [Spec,TP] to check nominative Case assigned by finite T under Spec-head agreement.

Besides the introduction of the external argument in its specifier position, another important function of Voice is the assignment of accusative Case to the direct object DP. This captures the connection between the realization of the external argument as the subject and the ability of the verb to assign accusative Case to its internal argument, which is known as Burzio's Generalization (Burzio, 1986). Accordingly, while being present in transitive verbs, VoiceP is absent in unaccusative verbs (cf., e.g., Chomsky, 1995, 315–316), which makes their internal argument move to [Spec,TP] in order to be assigned (nominative) Case.[4]

In order for Voice to be able to assign accusative to the complement via government, the latter needs to be located in [Spec,VP], either being base-generated in this position, as commonly assumed, or having moved there from its base [Comp,VP] position (see, e.g., Johnson, 1991). Since, however, the exact mechanism of Case-assignment to direct objects is not

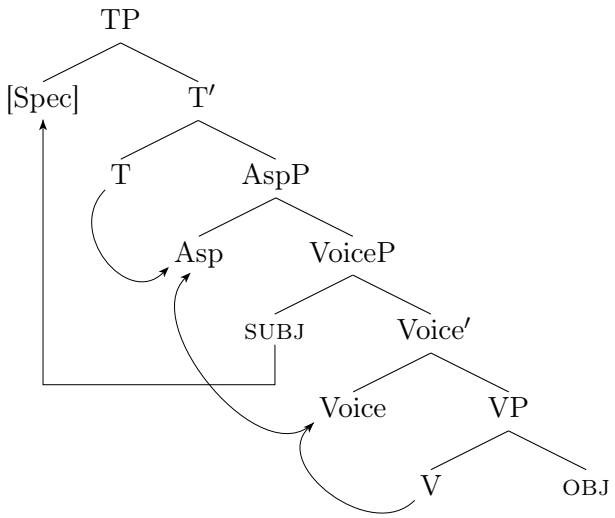
[3] This functional projection is called PrP in Bowers (1993), vP in Chomsky (1995), TrP in Collins (1997). Note that Bowers' PrP is different from vP/TrP/VoiceP insofar as it also introduces subjects of non-verbal predication in its specifier position. Following Baker (2003), I will distinguish between VoiceP (vP/TrP) present in verbal predication and PredP (PrP) present in non-verbal predication, as will be discussed below.

[4] For passives and middles, by contrast, I assume that they do contain (non-active) Voice heads, which, however, cannot assign accusative Case to the internal argument (cf., e.g., Keyser & Roeper, 1984; Roberts, 1987; Stroik, 1992). Neither unaccusatives, nor passives and middles will concern me in this thesis, though.

relevant for this thesis, I will assume that direct objects are generated in [Comp,VP], but will leave the question open how they check Case.[5]

With respect to further verbal functional projections located between VoiceP and TP, I will assume that AspP is always present above VoiceP for semantic reasons, while such projections as PerfP, ModP, NegP, etc., are only present if the respective heads are overtly realized, following in this respect the WYSIWYG (What You See Is What You Get) approach (cf., e.g., Bošković, 2014). I will furthermore assume that differently from auxiliaries, which raise to T to check tense, lexical verbs cannot undergo V-to-T movement in English (cf., e.g., Emonds, 1978; Pollock, 1989) and instead V-to-Asp raising via Voice together with T-to-Asp lowering take place.[6] Accordingly, the structure of an active sentence with a transitive verb will be assumed in this thesis to be as shown below.

(1.9)



Semantics Let us consider the semantic contributions of the constituents introduced above and the modes of their semantic composition. Be-

[5] Alternatively, Voice may assign Case to the direct object DP via Spec-head agreement, analogously to the situation with the subject DP discussed above. In this case, however, Voice has to be assumed to have two specifiers, as is done in Chomsky (1995), since (one) [Spec,VoiceP] is already occupied by the subject DP base-generated there.

[6] A problem associated with T-to-Asp lowering (which goes back to Affix Hopping in early generative grammar; see, e.g., Chomsky, 1957) is the fact that the trace of a downward movement is not c-commanded by its antecedent. Alternatively, it may be assumed that covert LF-movement of V to T takes place (cf., e.g., Chomsky, 1995) or that V-to-T movement of lexical verbs does exist in English (cf., e.g., Johnson, 1991; Fox & Pesetsky, 2003).

fore, however, clarification of some of the type-theoretic terminology and notation used in this thesis is necessary. In particular, the term "individuals" requires some clarification, since in the literature it is used both in a broad sense, according to which the domain of individuals D_e includes objects, kinds, degrees, events, times, locations, worlds, and possibly also some other sorts of "particulars" (cf., e.g., M. Landman, 2006, 2), and in a narrow sense, according to which D_e contains only "objects", but not kinds, degrees, events, etc. Hence, to avoid this terminological ambiguity, I will use the term "individuals" for individuals in the narrow sense and the term "entities" for individuals in the broad sense (i.e., as comprising at least the sorts of particulars that occur in this thesis, namely, individuals, degrees, events, times, manners, and worlds). The latter term will be used in particular in cases when denotations/denotation templates or composition rules hold for multiple sorts of entities. In order to simplify the formulation of such denotations and rules, I will use the symbol "ε" for the type of entities, as well as for the variable of that type. In other words, ε will represent an underspecified type which may stand for any type of particulars, when it is not necessary to be more specific.

In accordance with the central thesis of (neo-)Davidsonian event semantics (Reichenbach, 1947; Davidson, 1967; Parsons, 1990), I assume that verbs have an event argument. Hence, since the external argument is introduced separately by Voice, as discussed above, intransitive verbs denote properties of events, type $\langle v, t\rangle$, whereas transitive verbs denote functions from individuals to properties of events, type $\langle e, vt\rangle$. Thus, the denotation templates of intransitive and transitive verbs may be represented as below, where $\mathbf{V}$ stands for the relevant verbal predicate.[7]

(1.10) a. $\lambda e.\mathbf{V}(e)$ [*intransitive*]
b. $\lambda x \lambda e.\mathbf{V}(x)(e)$ [*transitive*]

If the internal argument of a transitive verb is an expression of type e, it combines with the denotation of the verb, cf. (1.10b), or, more precisely, with the equivalent denotation of V', by means of the composition

[7]Strictly speaking, the internal argument of a transitive verb need not be an individual, but may also be an entity of some other sort, for instance, an event, as in the case of *enjoy* or *begin*, cf. *enjoy (watching) a movie* or *begin (reading) a book*. Hence, a general denotation template of transitive verbs should possibly be formulated such that they are expressions of type $\langle \varepsilon, vt\rangle$, rather than $\langle e, vt\rangle$. An analogous consideration holds also for Voice, whose denotation is given below, cf. (1.15). Since, however, only verbs whose internal and external arguments are individuals occur in this thesis, the semantics in (1.10b) and (1.15) is formulated in a more conventional way.

rule of *Functional Application* (FA). Roughly following Heim & Kratzer (1998), it is defined as follows:[8]

(1.11) *Functional Application* (FA)

For any $\alpha \in D_\sigma$ and $\beta \in D_{\langle\sigma,\tau\rangle}$, where σ and τ are any defined semantic types, if both α and β are immediately dominated by γ, then $\gamma \in D_\tau$ and

$$[\![\gamma]\!] = [\![\beta]\!]([\![\alpha]\!]).$$

If, however, the internal argument of a transitive verb is a quantificational DP and, moreover, quantificational DPs are assumed to be of type $\langle et, t\rangle$, it cannot combine with the verb denotation of type $\langle e, vt\rangle$ by FA, because neither of them can take the other as an argument. This state of affairs is commonly circumvented by assuming that quantificational DPs of type $\langle et, t\rangle$ are not interpreted in situ, but undergo *Quantifier Raising* (QR), covert LF-movement to a higher adjunction position of type t, i.e., to TP under current assumptions (May, 1977, 1985).[9] In what follows, I will outline the basic semantics of movement relevant for QR and other types of DP-movement employed in this thesis.[10]

Thus, let α be an expression of type ε or $\langle \varepsilon t, t\rangle$ which moves out of β to some position immediately dominated by δ, as shown in (1.12). Technically, movement implies the following operations. First, in the original position, α leaves behind a co-indexed trace (t) of type ε, both when α is of type ε and when it is of quantificational type $\langle \varepsilon t, t\rangle$. Specifically in the

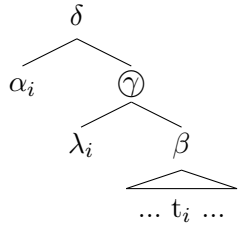
[8] All composition rules defined in what follows presuppose binary branching.

[9] Quantificational DPs are not always analyzed as being of type $\langle et, t\rangle$, but are also sometimes treated as expressions of type $\langle\langle e, vt\rangle, vt\rangle$, see, for example, Ferreira (2005, 23) or Nakanishi (2007, 266). In this case, however, they cannot be assumed to adjoin to TP in the course of QR, given that the event argument is closed off at the level of TP. Instead, quantificational DPs of type $\langle\langle e, vt\rangle, vt\rangle$ have to be interpreted in situ or be quantifier-raised to VP or vP/VoiceP (for a discussion of VP as a possible adjunction site for quantifier-raised DPs, although not in the framework of event semantics, see Heim & Kratzer (1998, §§ 8.3–8.4) and references therein, as well as Fox (2000)). Quantificational DPs of this type, or, more precisely, of type $\langle\langle m, vt\rangle, vt\rangle$, are further discussed in section 3.2.1.

[10] The semantic operations associated with movement, as they are described below, do not cover cases of moved property-denoting constituents, given that they are to be interpreted at the landing site and not in the unmoved position. To account for such cases, the technical apparatus described below needs to be supplemented by traces of type $\langle \varepsilon, t\rangle$ and by lambda-abstracts for variables of the same type. See section 4.1.3.1, in particular fn. 43, for some further discussion of this issue specifically with respect to AP-movement.

case of quantifier-raised internal argument DPs discussed above, the fact that their traces are of type e and not $\langle et, t\rangle$, like the DPs themselves, allows them to combine with verb denotations, which are of type $\langle e, vt\rangle$. Semantically, traces are bound variables interpreted via assignment functions. Hence, the denotation of the trace t_i is as in (1.13), where g is a variable assignment function that maps i to some individual in D_ε.

(1.12)



(1.13) $[\![\mathrm{t}_i]\!]^g = g(i)$

Second, at the landing site—or, more precisely, right below it—movement of α_i triggers the adjunction of the lambda-abstract λ_i which binds the variable corresponding to the trace with the index i. Thus, the interpretation of γ in (1.12) above is governed by the rule of *Lambda Abstraction* (LA) defined below, where $g[\varepsilon/i]$ is a variable assignment function which maps i to ε.

(1.14) *Lambda Abstraction* (LA)

For any $\beta \in D_\tau$ and λ_i, where τ is any defined semantic type and λ_i is a lambda-binder for some index i, if both β and λ_i are immediately dominated by γ, then $\gamma \in D_{\langle\varepsilon,\tau\rangle}$ and for any assignment function g

$$[\![\gamma]\!]^g = \lambda\varepsilon.[\![\beta]\!]^{g[\varepsilon/i]}.$$

Specifically in the case of quantifier-raised object DPs, β corresponds to TP, whose type $\tau = t$. Accordingly, γ is of type $\langle e, t\rangle$; therefore, it can combine with the quantificational DP α, which is of type $\langle et, t\rangle$.

Let us come back to the semantic derivation along the general structure in (1.9). The denotations of VPs of transitive and intransitive verbs alike are, thus, of type $\langle v, t\rangle$, independently of whether the internal argument of the former ones is a quantificational DP or not. In a next step, VP is taken as a complement by Voice, which introduces in its semantics a thematic role function that relates the external argument to the event. Since only *eventive* verbs in the *active* that have *agents* as their external

argument will occur in the examples in this thesis, only the semantics of the relevant AGENT Voice head is given below:[11]

(1.15) $[\![\text{AGENT}]\!] = \lambda P_{\langle v,t\rangle}\lambda x\lambda e\ [P(e) \wedge \mathbf{agent}(x)(e)]$

The external argument DP merges in [Spec,VoiceP] and semantically combines with Voice′ in the same way as described above for the internal argument, i.e., by FA if it is of type e and via QR if it is of quantificational type $\langle et, t\rangle$.[12] As a result, VoiceP is a constituent of type $\langle v, t\rangle$.

Furthermore, the semantic contributions of the Asp and T heads will be considered to be as follows. Based on Reichenbach's (1947) theory of tense, which distinguishes between the event time, the speech time, and the reference time, I will follow a common assumption that Asp expresses the relation between the event time and the reference time, whereas the role of T is, by contrast, to relate the reference time and the speech time (see W. Klein, 1994; Giorgi & Pianesi, 1997; Kratzer, 1998; Demirdache & Uribe-Etxebarria, 2000; Pancheva, 2003; Ramchand, 2004, among many others). For the sake of illustration, the denotations of the perfective and imperfective aspectual heads are given below. Specifically, their function is to take a property of events, quantify over the event variable, map the event to its run time by means of the temporal trace function τ (Krifka, 1989, 1992), and relate this event time to some reference time t. Imperfective locates the reference time within the event time, while in the case of perfective the event time is included in the reference time.

[11] Notice that (1.15) is a modified version of Kratzer's (1996) semantics of Voice in *eventive* verbs, which looks as follows (for *stative* verbs, Kratzer postulates a different Voice head that introduces the thematic role function **holder**):

(i) $[\![\text{Agent}]\!] = \lambda x\lambda e.\mathbf{agent}(x)(e)$

Obviously, given this semantics of Agent (type $\langle e, vt\rangle$), it cannot be combined with VP (type $\langle v, t\rangle$). Therefore, Kratzer postulates a new composition rule which she calls *Event Identification*:

(ii) *Event Identification* (EI)

$f_{\langle e,vt\rangle}$	$g_{\langle v,t\rangle}$	$\longrightarrow$	$h_{\langle e,vt\rangle}$
$\lambda x\lambda e.\mathbf{f}(x)(e)$	$\lambda e.\mathbf{g}(e)$		$\lambda x\lambda e\ [\mathbf{f}(x)(e) \wedge \mathbf{g}(e)]$

To avoid the introduction of a special composition rule for this purpose, the semantics of the AGENT Voice in (1.15) is defined such that it incorporates this composition rule and is, thus, of a higher order.

[12] As discussed above, external argument DPs move from [Spec,VoiceP] to [Spec,TP] to check nominative Case. However, for reasons of simplicity, they will be interpreted in their base position in this thesis when they are of type e.

(1.16) a. $[\![\text{IMPF}]\!] = \lambda P_{\langle v,t\rangle}\lambda t.\exists e\ [P(e) \wedge t \subseteq \tau(e)]$
b. $[\![\text{PFT}]\!] = \lambda P_{\langle v,t\rangle}\lambda t.\exists e\ [P(e) \wedge \tau(e) \subseteq t]$

Thus, Asp denotes a function from properties of events to properties of times, type $\langle vt, it\rangle$. Higher up, T combines with AspP quantifying over the time variable and anchoring the reference time t to the speech time, e.g., **now**, as shown below for past and present. T is, accordingly, of type $\langle it, t\rangle$; its application to the AspP denotation yields a truth value.

(1.17) a. $[\![\text{PAST}]\!] = \lambda P_{\langle i,t\rangle}.\exists t\ [P(t) \wedge t \prec \textbf{now}]$
b. $[\![\text{PRES}]\!] = \lambda P_{\langle i,t\rangle}.\exists t\ [P(t) \wedge t \circ \textbf{now}]$

Let us now turn to the assumptions concerning the structure of sentences with non-verbal predicates and their compositional interpretation.

1.3.2 Non-verbal predication

Syntax Like for verbal predication, I assume that subjects of predicative adjectives and nouns are not base-generated in the specifier position of their maximal projection and are not θ-marked by them (contra, e.g., Stowell, 1981, 1983). Rather, following Bowers' (1993) seminal idea, they will be considered as originating in the specifier position of a special functional head Pred (Pr in Bowers (1993)), which takes an AP or an NP as a complement. Differently from Bowers, however, I do not assume PredP to be present also in verbal predication; instead, the external argument of verbs is supposed to be licensed as the specifier of VoiceP, as discussed above.[13] Thus, the syntax of non-verbal predication which is adopted in this thesis is as represented below:

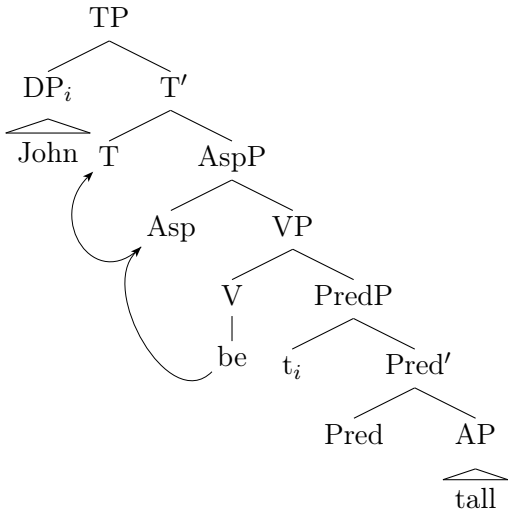
[13]This position has been advocated by Baker (2003, §§ 2.3–2.5), whose main argument for distinguishing between Voice/v in verbal predication and Pred in non-verbal predication comes from the fact that it is not possible to conjoin a predicative AP or NP with a verb, whereas predicate APs and NPs can be conjoined even though they belong to distinct lexical categories, cf. the following examples from Baker (2003, 38):

(i) I consider John crazy and a fool.

(ii) a. *Sitting in the hot sun made Chris thirsty and drink a can of soda.
b. *Winning the game made Chris champion of the chess club and celebrate.

Unlike Bowers' analysis, Baker's analysis gives a straightforward explanation to the ungrammaticality of (ii) in terms of the impossibility to coordinate unlike categories (PredP and VoiceP). By contrast, (i) exemplifies felicitous conjunction of two PredPs on the assumption that PredP is present in both adjectival and nominal predication.

(1.18)



Note also that, following Baker (2003, §§ 2.4–2.5), I assume that the copula *be* is not an overt realization of Pred, but a bearer of tense/aspect and agreement morphology, which cannot be borne by A or N, and that Pred is accordingly phonologically null in English.[14]

Semantics Let us now sketch the semantics of PredP with the focus on predicate *adjectives*, relevant for this thesis. Bowers (1993) suggests that his syntax of predication allows a straightforward mapping to the semantics of predication based on Chierchia's Property Theory (see Chierchia, 1984, 1985; Chierchia & Turner, 1988). According to it, predicative APs would denote *properties as singular terms*, i.e., would be of a basic semantic type (type of nominalized functions *nf* in Chierchia's system or type π in Bowers' system), rather than *properties as predicates*, i.e., propositional functions of type $\langle e, t\rangle$, as in Montague semantics. However, properties as singular terms correspond in a systematic way to propositional functions. In fact, the former need to be converted into the latter so that they can combine with the subjects of predication, which is done by the

[14] One of Baker's arguments for this view comes from the fact that *be* does not occur with predicate nouns and adjectives in untensed small clauses (Baker, 2003, 40):

(i) a. The poisoned food made Chris sick/an invalid.
b. I consider Chris intelligent/a genius.

However, also in such untensed small clauses Pred is needed to introduce the subject of predication.

predication relation $^{\cup}$. Bowers' PredP analysis and Chierchia's Property Theory offer together an attractive syntax–semantics mapping insofar as Pred may be assumed to be the head that contributes $^{\cup}$ in its semantics (Bowers, 1993; Svenonius, 1994a; Adger & Ramchand, 2003).[15]

However, an implementation of the analysis of manner adjectives proposed in this thesis within Property Theory would require to develop an account of adjectival properties as singular terms in the *attributive* position and of *gradable* adjectival properties as singular terms, which would take me too far afield. Furthermore, since the analysis advocated in this thesis implies that adjectives may denote properties of other sorts of entities than individuals, in particular, manner adjectives will be analyzed as properties of manners, an implementation of this analysis within Property Theory would require the type of properties as singular terms to be subdivided into sub-types of basic individual-properties, manner-properties, etc., such that they can be converted by the appropriate sub-types of Pred into predicates over the right sorts of entities, which would introduce an additional complication not crucial for the matters of this thesis. For these reasons, I will adopt a more conventional conception of properties as predicates, thus assuming that APs denote propositional functions of type $\langle \varepsilon, t \rangle$, rather than properties as singular terms. Accordingly, Pred will be given the near-empty semantics of what Partee (1986) calls "apply predicate" represented below:[16,17]

[15] Adger & Ramchand (2003) propose a more transparent semantics of Pred in terms of the relation $\lambda\pi\lambda x.\mathbf{holds}(\pi)(x)$ of type $\langle \pi, \langle e, t \rangle \rangle$, which maps properties of type π onto predicates of individuals.

[16] In fact, the semantics of "apply predicate" is given by Partee (1986) to the copula *be* (see also, e.g., Mikkelsen, 2004; Geist, 2008), which I assume not to be a realization of Pred. Hence, *be* needs to be given its own semantics, which is plausible to assume to be vacuous (an identity function), since *be* is supposed to be inserted for grammatical reasons as a morphology bearer.

[17] As it stands now, PredP is an expression of type t, and so it is not clear how it can combine semantically with Asp and later with T. This situation may be improved in several various ways. On the one hand, adjectives may be assumed to have an additional time or event argument (with a possible difference in this respect between individual-level and stage-level adjectival predicates), which is open at the level of PredP and gets bound by a quantifier that comes from the semantics of Asp or T. However, in this case, the question is what closes it off when the adjective is used attributively. On the other hand, a time variable may be introduced in the semantics of Pred, which may be defined, for example, along the lines of $\lambda P_{\langle \varepsilon, t \rangle} \lambda\varepsilon\lambda t.\mathbf{holds}(P)(\varepsilon)(t)$ reading as 'a property P holds of an entity ε at a time t'. This sort of semantics is, though, more adequate if properties are considered as a basic semantic type, as in Property Theory. For reasons of space and relevance, these issues will be set aside in this thesis; hence, compositional semantics of predicational structures will be spelled out up to PredP.

(1.19) $[\![\text{PRED}]\!] = \lambda P_{\langle \varepsilon,t \rangle} \lambda \varepsilon . P(\varepsilon)$

The semantics of Pred above is underspecified as to the sort of entities (type $\langle \varepsilon t, \varepsilon t \rangle$) in order to cover at once predication with adjectives which denote properties of individuals, events, manners, etc.

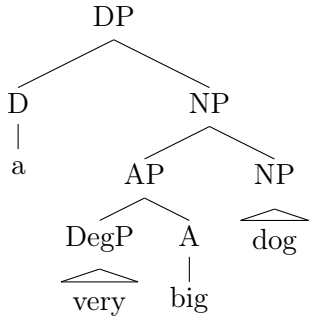
1.3.3 Modification and gradability

Syntax Following Abney's (1987) DP-hypothesis, I assume that rather than being specifiers of NP, determiners head a projection that takes NP as a complement, thus forming the 'extended projection' of N. Also some further nominal functional projections, such as, e.g., NumP, are possibly located between DP and NP (see, e.g., Zamparelli, 2000; Borer, 2005a); these will not concern us here, though.

However, contra Abney (1987), I will not assume that (pre-nominal) attributive adjectives are heads that take NPs as complements, but will rather follow a more traditional conception of them as adjuncts.[18] Some motivation for this choice of the analysis will be given below.

Finally, for gradable adjectives, I will adopt the analysis proposed by Bresnan (1973), according to which degree expressions head DegPs that are located in [Spec,AP].[19] Hence, the overall syntactic structure of DPs containing a noun modified attributively by a gradable adjective will be assumed to be as follows (cf. the analysis of the same example in Abney, 1987, 214):

(1.20)



[18] More specifically, I take English adjectives to be NP-adjuncts (see, e.g., Bernstein, 1991; Valois, 1991; Svenonius, 1994b), assuming that phrases can adjoin only to maximal projections (Chomsky, 1986). For N′-adjunction and N-adjunction analyses, see, e.g., Santelmann (1993) for Swedish and Sigurðsson (1993) for Icelandic, respectively.

[19] See also, e.g., Jackendoff (1977); Hellan (1981); Hazout (1995b). According to an alternative analysis, Deg takes AP as its complement; the (extended) projection of A is thus a DegP, rather than an AP under this analysis (cf. Kennedy, 1999, 2007).

The analysis of attributive adjectives as adjuncts is appealing insofar as it straightforwardly captures two central properties of them: *optionality* and *iterability*. However, without some independently assumed mechanisms, it is unable to account for certain other properties of attributive adjectives, including the following ones.

First, the adjunction analysis does not provide an explanation of the *head-final constraint* on *pre-nominal* adjectives in English, that is, their inability to take complements or adjuncts (see Emonds, 1976; Williams, 1982; Escribano, 2004).[20] In order to be able to occur with their complements or adjuncts, adjectives in English must appear *post-nominally*, as the following examples from Abney (1987) demonstrate:[21]

(1.21) a. the [proud] man
*the [proud of his son] man
b. *the man [proud]
the man [proud of his son] (Abney, 1987, 208)

Second, the adjunction analysis does not account for the restrictions on the *number* and *order* of (non-coordinated) attributive adjectives (cf. Dixon, 1977; Hetzron, 1978; Sproat & Shih, 1991; Cinque, 1994; Scott, 2002), since adjunction is by definition unordered and allows for infinite iteration.[22]

These phenomena have been claimed to be better captured by other analyses of attributive adjectives, namely, by the head analysis (Abney, 1987) and the specifier analysis (Cinque, 1994, 1995, 2010; see also, e.g., Laenzlinger, 2000; Scott, 2002), respectively. On the other hand, how-

[20] The head-final constraint on pre-nominal adjectives seems to be violated by examples like the ones in (i). For a discussion of such cases as possibly resulting from lexical processes, see Escribano (2004).

(i) a. a [$_{AP}$ higher-than-average] (basic) salary
b. a [$_{AP}$ hard-to-pronounce] (Czech) name (Escribano, 2004, 5)

See also fn. 45 in section 3.1.2.3 and fn. 77 in section 3.3.2 for a discussion of similar cases with non-head-final PP modifiers.

[21] Abney (1987) does not address the question of why post-nominal adjectives may take complements or adjuncts, but within his theory it would be plausible to assume that they are generated in the predicate position of a relative clause. This assumption has been made also under other analyses (see, e.g., Larson & Marušič, 2004; Cinque, 2010), and it will be followed in this thesis as well, see section 4.2.4.1.

[22] The unmarked order of non-coordinated attributive adjectives has been observed to be generally the same cross-linguistically. For example, a *quality* adjective usually precedes a *size* adjective, which in turn usually precedes a *color* adjective.

ever, it has been argued that, in fact, these analyses do not give a satisfactory explanation for the phenomena in question either and that they also face certain additional problems. Below, I will briefly mention some arguments against the head and specifier analyses, which determine my choice of the adjunction analysis.[23]

Head-final effects with pre-nominal adjectives in English are naturally accounted for by Abney's head analysis. According to it, they cannot take their usual complements (typically PPs or CPs), since their complement position is occupied by NP (or AP in the case of multiple adjectives)[24], whereas their adjuncts will appear on the right side of the entire AP, i.e., following the noun, rather than between the adjective and the noun. The complement position of predicate adjectives is, by contrast, not filled by NP or AP and so can be occupied by PP or CP.

However, although the head-final constraint in English has been discussed mainly in connection with attributive adjectives, modifiers belonging to other categories and modifying other categories are in fact subject to it as well, as shown by Escribano (2004), cf. his examples in (2)–(18).[25] Hence, the inability of pre-nominal adjectives in English to take complements/adjuncts is only part of a more general constraint, which cannot be explained by generalizing the logic of Abney's head analysis (that is, by assuming that the complement position of the head of the modifier is occupied by the modified constituent, and thus it cannot take any other complement). Therefore, an explanation for this more general constraint still needs to be found; it would make the head analysis as an account of head-final effects with attributive adjectives redundant, though.[26] Thus, the head analysis does not have an advantage over the adjunct analysis with respect to head-final effects if considered in a broader perspective.[27]

[23] Comprehensive reviews of syntactic analyses of attributive adjectives can be found in Delsing (1993); Svenonius (1994b); Kester (1996b); Matushansky (2002); Escribano (2006); Pysz (2006); Maezawa (2008).

[24] See Larson (1988) for the Single Complement Hypothesis.

[25] Escribano (2004, 2) also gives the following example of a non-head-final adverbial VP-modifier:

(i) a. He reached the same results [$_{\text{AdvP}}$ independently [$_{\text{PP}}$ of Leibniz]].
b. *He [$_{\text{AdvP}}$ independently [$_{\text{PP}}$ of Leibniz]] reached the same results.

I will argue, however, that it must be post-verbal due to its weight, rather than its non-head-final status, see section 3.3.

[26] See Escribano (2004) for an overview of approaches to the head-final constraint on modifiers and a theory of modification which derives it without additional stipulations.

[27] Furthermore, the head analysis bans *discontinuous*, or *split*, APs with pre-nominal

Moreover, Abney's head analysis faces general architectural flaws (for comprehensive overviews, see Svenonius, 1994b; Matushansky, 2002; Escribano, 2006). In particular, his APs, which contain adjectives and their modified nouns, do not behave distributionally like APs, but, of course, rather like NPs, since, for example, they cannot occur in the predicative position (see Escribano, 2006, 535). Relatedly, if iteration of attributive adjectives is analyzed such that the higher AP takes the lower AP as its complement, it is unclear what should block this possibility for predicative adjectives, which cannot be iterated (see Matushansky, 2002, 146).

According to the specifier analysis, attributive adjectives are assumed to be specifiers of functional projections between DP and NP, which follow a hierarchy imposed by UG. Thus, the order and number of adjectives follow automatically, as they mirror the hierarchy of functional heads and their number in this hierarchy. This captures the data concerning the order and number restrictions by stipulation, but does not explain what is the cause of these restrictions. In other words, the question of why adjectives are ordered in a certain way is just substituted by the question of why the relevant functional heads are ordered in this way, which remains unanswered (cf. Matushansky, 2002, 147ff.).[28] Furthermore, independent evidence for the existence of FPs which host adjectives in their specifier positions is missing. Since their heads are phonologically null and semantically empty, the only evidence for their existence comes from the adjectives in their specifiers.

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adjectives having post-nominal *complements* (not adjuncts). Such discontinuous APs are indeed mostly ungrammatical, cf. (ia), but in some cases they are felicitous, as in (ib), which the head analysis does not account for.

(i) a. *a capable man of murder
*a next person to me
b. a subsequent article to Chomsky's
a similar car to mine (Escribano, 2005)

For analyses of discontinuous APs, see, e.g., Escribano (2005) and Maezawa (2008). They will also be discussed in section 3.1.2.1 in connection with the (in)ability of adverbs to take complements.

[28] In fact, it has been suggested that ordering restrictions are governed by cognitive, semantic, prosodic, but not syntactic factors (Sproat & Shih, 1991; Pereltsvaig, 2007; Bošković, 2009; see also Wulff, 2003, for an extensive corpus analysis of various factors that influence adjective order in English). Concerning number limitations of attributive adjectives, their nature has been argued to be pragmatic, rather than syntactic, being determined by such factors as processing difficulty, like also in the case of embedded relative clauses, whose number is limited practically, but not theoretically (cf. Matushansky, 2002, 156).

Therefore, since alternative analyses appear not to have an advantage over the adjunction analysis with respect to head-final effects and number and order restrictions, while the latter captures basic properties of attributive adjectives with fewer assumptions, it will be adopted in this work.[29]

Semantics Let us now discuss how adjectives used attributively combine with their modified nouns. If attributive APs are analyzed as being of type $\langle \varepsilon, t \rangle$, like their predicative counterparts, they will not be able to combine with the NPs they adjoin to via Functional Application, as the latter are of the same type $\langle \varepsilon, t \rangle$. There are two ways out of this situation discussed at length in Heim & Kratzer (1998, § 4.3). One possibility is to introduce a new composition rule specifically for this case, thus keeping the semantics of attributive and predicative adjectives uniform. Another possibility is to change the semantics of attributive adjectives such that it incorporates the necessary composition rule and thus can combine with the semantics of nouns by FA, being of type $\langle \varepsilon t, \varepsilon t \rangle$.

Although either way is costly, I will adopt the former option because it allows to avoid postulating semantic doublets for attributive and predicative adjectives, which would differ in a completely *systematic* way. In view of this fact, the employment of a rule appears to be more legitimate. Thus, the semantics of APs will be kept uniform across their uses; in the attributive position, it will be combined with NP denotations by means of the composition rule of *Predicate Modification* (PM), which, following Heim & Kratzer (1998), is defined as below. PM ensures an *intersective*, or *conjunctive*, composition of two one-place first-order properties of the same type and corresponds to *adjunction* in the syntax.

(1.22) *Predicate Modification* (PM)

For any $\alpha \in D_{\langle \varepsilon, t \rangle}$ and $\beta \in D_{\langle \varepsilon, t \rangle}$, if both α and β are immediately dominated by γ, then $\gamma \in D_{\langle \varepsilon, t \rangle}$ and

$$[\![\gamma]\!] = \lambda\varepsilon.[\![\alpha]\!](\varepsilon) \wedge [\![\beta]\!](\varepsilon).$$

Finally, let me conclude this overview of the key background assumptions by sketching my assumptions concerning the semantics of gradability. I will follow the *relational* analysis of gradable adjectives, according to which they denote relations between entities and degrees (type $\langle d, \varepsilon t \rangle$), rather than properties of entities (see, e.g., Cresswell, 1976; Hellan, 1981;

[29] But see Escribano (2004) for a discussion of adjunction as a problematic notion in X-bar theory, and for a theory of modification that dispenses with it.

von Stechow, 1984; Bierwisch, 1989; E. Klein, 1991; Heim, 2000; Kennedy & McNally, 2005).[30] Thus, the meaning of a gradable adjective A includes the corresponding *measure function* **A** which takes an entity and returns a degree on the relevant scale, cf. the denotation template in (1.23):

(1.23) $[\![\text{A}]\!] = \lambda d \lambda \varepsilon . \mathbf{A}(d)(\varepsilon)$

The value of the degree argument of gradable adjectives is determined by degree expressions. Specifically in the case of the positive form, DegP is usually assumed after von Stechow (1984) to be headed by the null degree morpheme POS, which relates the degree argument to some *standard of comparison* $\mathbf{d}_s$:[31]

(1.24) $[\![\text{POS}]\!] = \lambda P_{\langle d,\varepsilon t\rangle} \lambda \varepsilon . \exists d \; [P(d)(\varepsilon) \wedge d \geqslant \mathbf{d}_s]$

Thus, after application of POS (type $\langle\langle d, \varepsilon t\rangle, \varepsilon t\rangle$), gradable APs have the semantics of type $\langle \varepsilon, t\rangle$, as it is also the case with non-gradable APs.

[30] See Kennedy (1999) for an alternative analysis, according to which gradable adjectives *denote* measure functions of type $\langle e, d\rangle$, and Deg is, consequently, of type $\langle ed, et\rangle$.

[31] For a discussion concerning the computation of the standard of comparison, see, e.g., Kennedy & McNally (2005); Kennedy (2007).

CHAPTER 2

From intensions to manners

The aim of this chapter is to provide a historical overview of approaches to the semantics of manner adjectives together with their critical evaluation. First, section 2.1 discusses Siegel's (1976) influential analysis in the framework of Montague grammar, according to which manner adjectives, being a subset of so-called non-intersective adjectives, denote intensional predicate modifiers. It will be shown that although her analysis accounts for the fact that manner adjectives produce substitution failure, all in all it is not an adequate approach to their semantics.

It will then be argued in section 2.2 that a more adequate approach is to assume that an implicit event is present in the logical form associated with adjectival manner modification. In particular, it allows to provide a unified analysis for manner adjectives and adverbs—given that the latter are standardly treated as predicates of events, and accounts for substitution failure and some other data not captured by Siegel's theory. Several existing event-based analyses of manner adjectives will be discussed, with the focus on the question of the source of the implicit event.

Finally, section 2.3 presents arguments that manners form a separate semantic type and that manner adjectives predicate of manners of events and not of events themselves. For manner adverbs, this implies that even though as a whole they are of type $\langle v, t\rangle$, their semantics is more complex than standardly assumed, insofar as it involves predication over manners contributed by the semantics of their base adjectives.

2.1 Intensions

2.1.1 Substitution failure

Already Aristotle observed that someone can be a good man and a bad cobbler at the same time (see *Sophistical Refutations*, 177b), and, for the same reason, a good thief can be a bad citizen. From this he concluded that *good* and *bad* do not attribute a property *simpliciter*, but relatively to some *function*, such as cobbling, for instance.[1]

It has later been noticed by linguists that this peculiarity in fact holds for many more adjectives than just *good* and *bad*, and that it effectively splits the category of adjectives into those that are "transferable from one noun to another"[2] and those that are not, as aptly described by Vendler (1968, 89) in the following passage:

> [A] slow speaker may be a fast runner and good dancer a bad chess-player, and so on. A red apple, however, cannot be a green fruit or a blue object.

The observation that some adjectives are not "transferable from one noun to another", as Vendler put it, has important consequences for the formal semantic analysis of adjectives. Specifically, it implies that not all adjectives can be analyzed in the standard way as first-order properties of individuals, like *red* in Vendler's example.[3] The latter can be formally demonstrated by means of the following sort of schema, employed among others by M. Siegel (1976):

[1] In the philosophical literature, it is common to speak of goodness *qua* cobbler in this context. Anscombe (1957, 1979) also used the term 'goodness *under a description*' for relative goodness.

[2] See Vendler (1968, 94).

[3] Despite the fact that adjectives like *red* are usually considered to be suitable candidates for the analysis in terms of first-order predicates, their status as independent properties of individuals did not remain unquestioned in the literature either (see, for instance, Wheeler, 1972; Lahav, 1989; Bosch, 1995, on this issue). The reason for this is the observation that they also exhibit some degree of context dependence; note, e.g., the variation in the meaning of *red* in such phrases as *red tomato*, *red hair*, *red wine*, *red face*, *red brick*, and so on. The analysis of such adjectives as simple properties of individuals implies, on the other hand, that they always make the same contribution to the meaning of the phrase in which they occur—independently of the meaning of the noun they modify. Therefore, a more sophisticated analysis is in fact potentially necessary for adjectives such as *red* as well. This issue is, however, outside the scope of this thesis.

(2.1) i. Francis is a surgeon.
ii. Francis is a violinist.
iii. Francis is a skillful surgeon.
iv. Francis is not a skillful violinist.

If *skillful* denoted a property of individuals, the semantics of (iii) and (iv) would be as represented in (2.2a) and (2.2b), respectively. That is, it would involve a contradiction, while the sentences in (2.1) are consistent, since they can be true at the same time. In other words, *skillful* gives rise to a *substitution failure*: It cannot be validly inferred from the combined truth of (i), (ii), and (iii) that Francis is a skillful violinist.

(2.2) a. $\mathbf{surgeon}(\mathbf{francis}) \wedge \mathbf{skillful}(\mathbf{francis})$
b. $\mathbf{violinist}(\mathbf{francis}) \wedge \neg\mathbf{skillful}(\mathbf{francis})$

Thus, the category of adjectives is semantically not uniform, as some of its members (including, importantly, manner adjectives, like *good*, *fast*, and *skillful*, mentioned above) cannot be analyzed in terms of properties of individuals. The question is then how to analyze them.

The next section will discuss an influential analysis of adjectives such as *skillful* that has been developed by M. Siegel (1976) in the tradition of Montague grammar. Siegel argues that such adjectives may not be *extensional* modifiers, for, taking again the example in (2.1), Francis need not necessarily be a skillful violinist—given that he is a violinist as well as a skillful surgeon—even in a model in which *violinist* and *surgeon* happen to be co-extensive. Based on the intuition that the meanings of this type of adjectives depend on the meanings of the nouns they modify, she suggests that they rather denote second-order functions from common noun *intensions* to common noun extensions. Intensions are, thus, Siegel's formal semantic implementation of Aristotle's concept of functions.

2.1.2 Intensional analysis

The central claim advanced by M. Siegel (1976) is that English adjectives fall into two distinct semantic sub-classes, which can be differentiated on the basis of the schema illustrated in (2.1). Thus, if the adjective makes a series of such sentences inconsistent, it is an *extensional* modifier, i.e., it attributes a property to the individuals in the extension of the noun it modifies. Formally, it is a first-order predicate of semantic type $\langle\langle s, e\rangle, t\rangle$ and syntactic category t///e. Some adjectives assigned by Siegel to this semantic class are given below.

(2.3) *aged*, *angry*, *carnivorous*, *drunk*, *fat*, *four-legged*, *ill*, *nude*, *tall*

Since the result of the semantic combination of an adjective from this class with the noun it modifies is the intersection of their extensions, Siegel calls such adjectives *intersective*.

(2.4) $[\![\text{aged N}]\!] = [\![\text{aged}]\!] \cap [\![\text{N}]\!]$

The denotation of an NP that contains an attributive intersective adjective is, in other words, a *conjunction* of two predicates. This captures the right entailments, as, e.g., an aged man is both a man and aged.

(2.5) $[\![\text{aged man}]\!] = \lambda x\ [\mathbf{aged}(x) \wedge \mathbf{man}(x)]$

By contrast, if the adjective can occur in a series of sentences like in (2.1) without making them inconsistent, it is analyzed as an *intensional* modifier, i.e., it does not ascribe a property to the individuals in the extension of the noun it combines with, but, rather, modifies the intension of the latter. Formally, it is, thus, a second-order function from common noun intensions into common noun extensions, which has semantic type $\langle\langle s, \langle\langle s, e\rangle, t\rangle\rangle, \langle\langle s, e\rangle, t\rangle\rangle$ and syntactic category CN/CN. Below are some examples of adjectives categorized by Siegel as belonging to this class.[4]

(2.6) a. *main*, *mere*, *rightful*, *utter*, *veteran*
b. *alleged*, *fake*, *former*, *ostensible*
c. *bad*, *beautiful*, *careful*, *clever*, *difficult*, *easy*, *good*, *intelligent*, *natural*, *navigable*, *old*, *regular*, *responsible*, *skillful*, *true*

Since adjectives of this category do not denote first-order properties, which combine with the denotations of nouns conjunctively, Siegel refers to them as *non-intersective*. NPs containing attributive non-intersective adjectives are assigned the semantics illustrated in (2.7), where '$^\wedge\alpha$' denotes the intension of α.

(2.7) $[\![\text{bad lutist}]\!] = \lambda x\ [\mathbf{bad}(^\wedge\mathbf{lutist})](x)$

Note that it does not follow from this representation that a bad lutist is a lutist. The absence of the predicate **lutist** as an additional conjunct

[4] Unlike Siegel (1976), and also Parsons (1970) and Kamp (1975), Montague (1970) himself analyzed *all* adjectives as second-order functions using the strategy of generalizing to the worst case in order to have a uniform mapping from syntactic categories to semantic types. The differences with respect to entailments between sub-classes of adjectives were captured separately by means of meaning postulates.

in (2.7), which would secure this entailment, might be surprising. In fact, however, not all non-intersective adjectives license this entailment, as *bad* does. The adjectives in (2.6a) and (2.6c) do; hence, set-theoretically, the denotations of NPs that contain them form *subsets* of the denotations of the modified nouns, cf. (2.8a). But the adjectives in (2.6b) do not—they license either no entailment (as *alleged*) or the entailment of the negation of the noun property (as *fake*), cf. (2.8b) and (2.8c), respectively.[5]

(2.8) a. $[\![\text{bad N}]\!] \subseteq [\![\text{N}]\!]$
b. $[\![\text{alleged N}]\!] \not\subseteq [\![\text{N}]\!]$
c. $[\![\text{fake N}]\!] \cap [\![\text{N}]\!] = \varnothing$

In order to keep the basic semantic contribution of all non-intersective adjectives the same across their sub-classes—which differ with respect to the entailments they give rise to as described above, Siegel makes it more general. Accordingly, the semantics of NPs that contain non-intersective adjectives has the form $\alpha(^\wedge\beta)$, where α is the denotation of the adjective and β is the denotation of the modified noun. In other words, any sorts of entailments of the noun property are taken out of this semantic representation. Instead, entailments are secured separately by *meaning postulates* associated with non-intersective adjectives of different sub-types. For example, for adjectives like *bad* Siegel formulates the meaning postulate in (2.9), where α and β are the denotations of the adjective and the noun, as before, while u is a variable of type e. Other types of non-intersective adjectives require further, different meaning postulates.

(2.9) $\Box[[\alpha(^\wedge\beta)](u) \rightarrow \beta(u)]$ (M. Siegel, 1976, 29)

Importantly, it also does not follow from the semantic representation in (2.7) above that a bad lutist is bad *simpliciter*, that is, bad in absolute terms, since *bad* is analyzed as an intensional predicate modifier, rather than a predicate of individuals. The absence of this entailment, which is shared by all sub-classes of non-intersective adjectives, makes it possible that a series of sentences as in (2.1) is consistent when a non-intersective adjective occurs in it. Thus, for example, given the semantic representation in (2.7), it cannot be inferred from a person's being a bad lutist and a violinist that this person is a bad violinist, because the application of an intensional modifier to different intensions does not necessarily yield the

[5]Non-intersective adjectives that have the entailment patterns as in (2.8a), (2.8b), and (2.8c) are sometimes called *subsective*, *non-subsective*, and *privative*, respectively (see, e.g., Kamp, 1975; Kamp & Partee, 1995; Partee, 2007).

same value, even if extensions are identical. Siegel's theory thus successfully accounts for substitution failure with non-intersective adjectives.

Yet Siegel assumes that absolute interpretations of such adjectives as *good* and *bad* exist as well, being understood in terms of one's morals or general qualities, cf. the paraphrases below.

(2.10) That is a good lutist. (M. Siegel, 1976, 53)
∼ 'He is generally or absolutely good, i.e., his morals or general qualities are good, and he is a lutist.'
∼ 'He is good as a lutist, i.e., his playing of the lute is good.'

Siegel assumes, in other words, that the adjective *good* comes in two versions that have two different, unrelated meanings: an intersective and a non-intersective one. Moreover, she suggests that, in fact, a large number of adjectives in English are "doublets" like *good*, that is, are lexically ambiguous between an intersective and a non-intersective variant. While (2.3) contains adjectives assumed by Siegel to be exclusively intersective and (2.6a) and (2.6b) list exclusively non-intersective adjectives, the adjectives in (2.6c) are "doublets". The intersective/non-intersective ambiguity is further illustrated below by two examples commonly cited in the literature, namely, *beautiful dancer* and *old friend*.[6]

(2.11) Marya is a beautiful dancer. (M. Siegel, 1976, 2, 99)
∼ 'Marya is (physically) beautiful and she is a dancer.'
∼ 'Marya is beautiful as a dancer, i.e., she dances beautifully.'

(2.12) Rachel is an old friend.
∼ 'Rachel is old (aged) and she is a friend.'
∼ 'Rachel is old as a friend, i.e., the friendship is old.'

[6]The claim concerning an ambiguity between two unrelated meanings seems to be easier to defend in the case of *beautiful* and *old* than in the case of *good* and, particularly, *skillful* and *careful*, all of which are doublets according to Siegel. In the former case, beauty and oldness can be argued to be attributed to two ontologically different entities on the two readings: *individuals* and *events/states* (dancing/friendship). The existence of independent intersective readings of adjectives such as *good*, *skillful*, and *careful* is more questionable because they can be argued to be in fact non-intersective readings with a generic relativization ('good/skillful/careful in everything one does'), as has been done by Croft (1984), cf. section 2.2.2.1, which would not be possible for the intersective readings of *beautiful* and *old*. Leaving this question open with respect to *good*, which might indeed have a separate absolute morality-related meaning, I will assume that the interpretation of adjectives like *skillful* and *careful* is always relative, specifically, that it is relative to an event, which follows from their analysis as manner modifiers (see the discussion in sections 2.2 and 2.3).

Finally, another important part of Siegel's theory concerns the mapping from the semantics of intersective and non-intersective modification to the syntax. In order to keep the semantic types of adjectives constant across positions, Siegel argues that both adjectival classes are associated with a unique syntactic position. In particular, intersective adjectives are assumed to be generated exclusively predicatively, while non-intersective adjectives—exclusively attributively.

This is, however, not reflected in the surface syntax in most cases, as the majority of intersective adjectives can also appear attributively, and many non-intersective adjectives can also be used predicatively.[7] Hence, in order to account for these facts, Siegel argues (a) that the attributive position of intersective adjectives is derived by a semantically empty rule which moves them into it from their underlying predicative position in a relative clause, cf. (2.14b) below; and (b) that what looks like the predicative position of non-intersective adjectives results from them modifying a dummy common noun Δ, which has no phonetic realization and whose interpretation is determined contextually, cf. (2.13a).

(2.13) That lutist is good.

a. That lutist is a $\text{good}_{\text{CN/CN}}$ Δ_{CN}.

b. That lutist is $\text{good}_{\text{t///e}}$.

(2.14) That is a good lutist.

a. That is a $\text{good}_{\text{CN/CN}}$ lutist.

b. That is a lutist who is $\text{good}_{\text{t///e}}$. (M. Siegel, 1976, 55)

Siegel's (1976) theory is an influential approach to adjectival semantics, which has often been considered as standard.[8] Although it does not address manner adjectives specifically, it provides an analysis of their semantics insofar as they belong to the class of non-intersective adjectives. In particular, it accounts for the fact that manner adjectives give rise to substitution failure by analyzing them as intensional modifiers. However,

[7] However, M. Siegel (1976, 53–54) notes that there is a correlation in the opposite direction, as all adjectives that appear exclusively attributively (*former*, *main*, *utter*, etc.) are exclusively non-intersective, while the few adjectives that appear exclusively predicatively (*alive*, *asleep*, etc.) are exclusively intersective.

[8] Also some other distinctions, which are similar to the intersective/non-intersective one, have been made in the literature; cf., e.g., the distinctions between *referent modification* and *reference modification* (Bolinger, 1967), semantic *predicatives* and *attributives* (Beesley, 1982), and *absolute* and *relative* adjectives (Higginbotham, 1985, 1989; DeGraff & Mandelbaum, 1993).

this theory is problematic in a number of respects, some of which will be addressed in what follows. Section 2.1.3.1 will discuss a *general* problem with Siegel's theory that has to do with the heterogeneity of the category of non-intersective adjectives, which will be shown to be too broad to be given a single uniform analysis. In turn, section 2.1.3.2 will be concerned with the inadequacy of this theory *specifically* for manner adjectives due to the fact that it is intensional and that it is centered on the semantics of the modified nouns. Finally, Siegel's analysis also does not account for some further data concerning manner adjectives, which will be presented in section 2.2.1.

2.1.3 Problems and open questions

2.1.3.1 Heterogeneity

The classification of adjectives into intersective and non-intersective ones is not fine-grained enough because the class of non-intersective adjectives consists of a number of obvious sub-classes, which differ in semantic and syntactic terms. In what follows, I will mention only some salient aspects of variation within the class of non-intersective adjectives that have been noted by Siegel herself.

One semantic difference between sub-types of non-intersective adjectives has already been pointed out in section 2.1.2. It concerns the kind of entailment that non-intersective adjectives license with respect to the noun property, cf. (2.8).

Another, syntactic, difference has to do with the ability to appear in the predicative position. Some non-intersective adjectives cannot be used predicatively (e.g., *main*, *alleged*), whereas some others can (e.g., *skillful*, *fake*), as the examples in (2.15) show. And since all non-intersective adjectives are assumed in Siegel's theory to be generated attributively, the question is therefore why adjectives like *skillful* and *fake* can be modifiers of the dummy common noun Δ, whereas adjectives like *main* and *alleged* cannot.

(2.15) a. *This reason is main.
b. This lutist is skillful.
c. *This murderer is alleged.
d. This gun is fake.

Yet another source of variation within the category of non-intersective adjectives is the compatibility with *as*-phrases. Thus, for instance, among

the four adjectives taken above, only *skillful* allows for *as*-phrases, as the following examples demonstrate:[9]

(2.16) a. *This is main as a reason.
b. He is skillful as a lutist.
c. *He is alleged as a murderer.
d. *This is fake as a gun.

The patterns of these four non-intersective adjectives with respect to the three parameters discussed here are summarized in the table below.

	entailment type	predicative use	*as*-phrases
main	$[\![\text{main N}]\!] \subseteq [\![\text{N}]\!]$	no	no
skillful	$[\![\text{skillful N}]\!] \subseteq [\![\text{N}]\!]$	yes	yes
alleged	$[\![\text{alleged N}]\!] \not\subseteq [\![\text{N}]\!]$	no	no
fake	$[\![\text{fake N}]\!] \cap [\![\text{N}]\!] = \varnothing$	yes	no

Even with respect to this limited set of parameters, all the four adjectives in the table above form distinct non-overlapping sub-classes. Siegel suggests that different entailment patterns can be taken care of by means of meaning postulates, whereas the ability/inability to modify a dummy noun and take *as*-phrases are represented in her analysis as features that are assigned to every non-intersective adjective. However, these meaning postulates and features do not in fact explain what is responsible for the differences in question between various non-intersective adjectives.[10]

Thus, the category of non-intersective adjectives exhibits semantic as well as distributional diversity which is not reflected in Siegel's analysis. In other words, the content of the notion of non-intersectivity is not very specific; it says more about what certain adjectives are *not*—namely, not properties of individuals—than about what they are. This fact is due to the nature of the phenomenon that Siegel uses to classify adjectives, i.e., substitution failure. While the *absence* of a substitution failure unequivocally identifies adjectives which denote first-order predicates, its *presence*

[9] The restricted sample of adjectives in the examples in (2.16) may create the impression that, among non-intersective adjectives, only manner adjectives (like *skillful*) can take *as*-phrases. This is not true, since *as*-phrases can also occur with such non-manner adjectives as, e.g., *useful*, *necessary*, *famous*, *respected*.

[10] Another important difference between various sub-types of non-intersective adjectives concerns paraphrasability with adverbs of different semantic classes; cf. fn. 14 in section 2.2.1. See, e.g., Bolinger (1967) and Vendler (1968) for a discussion of further differences.

is by contrast not a "mechanical diagnostic", using Larson's (1998) words, for a single phenomenon, such as intensionality, as believed by Siegel. In fact, substitution failure can result from the presence in the logical form of various additional dimensions, the possible world parameter being only one of them. Below, I will illustrate this for several classes of adjectives, for which there are well-established non-intensional analyses.

Gradable adjectives As has been pointed out by Siegel herself, gradable adjectives such as *tall* can occur in a series of sentences like in (2.1) without making them inconsistent:

(2.17) i. Rilly is a ballet dancer.
ii. Rilly is a basketball player.
iii. Rilly is a tall ballet dancer.
iv. Rilly isn't a tall basketball player. (M. Siegel, 1976, 109)

This should attest gradable adjectives as non-intersective adjectives, that is, as intensional modifiers. In fact, however, the consistency of the sentences in (2.17) is standardly considered not to be a matter of intensionality, but rather to be due to a change in the value of an additional, implicit parameter which is present in the semantics of the positive form of gradable adjectives—the standard of comparison. Moreover, this view has also been advocated by Siegel herself.

Let us for the sake of illustration give the semantic representations of (iii) and (iv) above, assuming the relational theory of gradability adopted in this thesis (section 1.3.3), cf. (2.18) below. Thus, in (iii), Rilly's height d is compared to the standard of tallness $\mathbf{d}_s$, which is calculated relative to the comparison class of ballet dancers, while in (iv) his height is compared to the standard of tallness for basketball players, $\mathbf{d}'_s$. Accordingly, the consistency of (iii) and (iv) is a result of the fact that the standards $\mathbf{d}_s$ and $\mathbf{d}'_s$ are not identical, the former being lower. Hence, Rilly's height can be higher than $\mathbf{d}_s$ but lower than $\mathbf{d}'_s$.

(2.18) a. $\mathbf{ballet\text{-}dancer}(\mathbf{rilly}) \wedge \exists d\ [\mathbf{tall}(d)(\mathbf{rilly}) \wedge d \geqslant \mathbf{d}_s]$
b. $\mathbf{basketball\text{-}player}(\mathbf{rilly}) \wedge \neg\exists d\ [\mathbf{tall}(d)(\mathbf{rilly}) \wedge d \geqslant \mathbf{d}'_s]$

So Rilly's being a tall ballet dancer and a basketball player does not imply his being a tall basketball player, because this involves a shift from a lower standard of comparison to a higher one. Note, furthermore, that the inverse implication—from a higher standard to a lower one—is valid, as the inconsistency of the sentences below demonstrates:

(2.19) i. Rilly is a ballet dancer.
ii. Rilly is a basketball player.
iii. Rilly is a tall basketball player.
iv. Rilly isn't a tall ballet dancer.

The fact that substitution failure with gradable adjectives can occur only in one direction further supports the view that the reason for it is a difference in the standards of comparison rather than intensionality. And consequently, the bidirectionality of substitution failure with manner adjectives suggests that there is more to it than gradability.

Relational adjectives Also relational adjectives such as, e.g., *medical* do not necessarily make a series of sentences like in (2.1) inconsistent, as the example in (2.20) demonstrates. In particular, imagine that Carl is a young man who was produced during the early days of in vitro fertilization and is thus a medical miracle, and, besides, that he is also a student of architecture now. In this context, the following statements about Carl would all be true:[11]

(2.20) i. Carl is a miracle.
ii. Carl is a student.
iii. Carl is a medical miracle.
iv. Carl is not a medical student.

The consistency of the sentences above implies that *medical* is a non-intersective adjective. Yet, an analysis of relational adjectives in terms of possible worlds does not seem to be plausible. A well-established alternative explanation of why it is possible to be a medical miracle and, at the same time, not a medical student is based on the idea that the semantic structure of relational adjectives contains a contextually determined implicit relation between the internal argument of their base nouns and the internal argument of their modified nouns (Levi, 1978; Mezhevich, 2002; Fradin & Kerleroux, 2003; Fábregas, 2007; Fradin, 2008, among others). Accordingly, (iii) and (iv) in (2.20) above receive the following semantic representations:

(2.21) a. $\mathbf{miracle}(\mathbf{carl}) \wedge \mathbf{R}(\mathbf{medicine})(\mathbf{carl})$
b. $\mathbf{student}(\mathbf{carl}) \wedge \neg\mathbf{R}(\mathbf{medicine})(\mathbf{carl})$

[11] I am grateful to Muffy Siegel (p.c.) for suggesting me a slightly different version of this example.

Under this analysis, the reason why (iii) and (iv) are consistent is the difference in the implicit relation which is present in the logical form. On the interpretations described above, **R** will be specified as **be-produced** in *medical miracle*, but as **study** in *medical student*. In other words, from Carl being a student and a miracle that is produced by medicine, it does not follow on simple extensional grounds that he is a person who studies medicine.

Color adjectives A series of consistent sentences as in (2.1) can even be constructed for color adjectives, like *red*, which are often regarded as prototypically intersective (but see fn. 3 in section 2.1.1). Thus, imagine a scenario in which a grapefruit, which is red inside, but yellow outside, is used as a juggling ball. In this context, all of the following statements will be true:

(2.22)
i. This thing is a grapefruit.
ii. This thing is a juggling ball.
iii. This thing is a red grapefruit.
iv. This thing is not a red juggling ball.

Even though *red* passes Siegel's test of non-intersectivity, it obviously does so not because it is an intensional modifier. Rather, the reason why the sentences in (2.22) are consistent is that *red* is applied selectively to two different parts of the same object, which are, however, not specified explicitly. In particular, it is attributed to the internal part of the object when the latter is conceptualized as a grapefruit, but to its surface when it is conceptualized as a juggling ball. Therefore, the semantic structure of (iii) and (iv) above contains an additional implicit relational predicate that specifies the relevant part of the object, represented in (2.23) below as **inside** and **outside**, respectively. It is precisely the difference in this predicate that allows (iii) and (iv) to be consistent, in an analogous way as with relational adjectives discussed before.

(2.23)
a. $\mathbf{gf}(\mathbf{this\text{-}thing}) \wedge \exists x\ [\mathbf{inside}(x)(\mathbf{this\text{-}thing}) \wedge \mathbf{red}(x)]$
b. $\mathbf{jb}(\mathbf{this\text{-}thing}) \wedge \neg\exists x\ [\mathbf{outside}(x)(\mathbf{this\text{-}thing}) \wedge \mathbf{red}(x)]$

Thus, an implicit additional dimension may in fact be also present in the semantic structure of NPs that contain adjectives denoting properties of individuals. A difference in the value of this dimension will give rise to substitution failure, which, however, is not an indication of intensionality in this case.

It is clear from the discussion above that substitution failure is a poor means for the identification of a specific semantic phenomenon, because it may result from the presence of various implicit additional dimensions in the semantic structure. In particular, substitution failure is not an unequivocal diagnostic for intensionality, as assumed by Siegel, even though her intensional analysis is plausible for *some* non-intersective adjectives, e.g., for modal adjectives, such as *alleged* and *possible*.

Also in the case of manner adjectives, there are reasons to doubt that substitution failure with them is a matter of intensionality. The following section will provide some initial motivation for assuming that it is rather caused by changes in an implicit *event* present in the logical form. Later, section 2.2.1 will present some further data that support this assumption.

2.1.3.2 Intensionality

Doubts that intensionality is involved in the semantics of manner modification have been first raised by McConnell-Ginet (1982, 162–163) in connection with manner *adverbs*, which may also trigger substitution failure in a similar way and which had been given an intensional analysis before as well (cf., e.g., Thomason & Stalnaker, 1973):

> The semantics of intensional logics is based on the construction of possible worlds. It recognizes that, although there may be identity of walkers and talkers in some situations, alternative situations exist in which some walkers do not talk, and vice versa. It is this possibility of alternative situations (other possible worlds), in which walking and talking are differently distributed as properties of individuals, that is used [by Thomason & Stalnaker (1973)] to distinguish *walk quickly* from *talk quickly*. But the intensional machinery does not provide a good model of how we think about WHY those walking quickly might be different from those talking quickly, even though walkers and talkers happen to be the same. The explanation lies not in the existence of an alternative situation (where individuals have different properties), but simply in the possibility of a different sorting of the individuals, given a refinement of the sorting principles. What matters is assessing an added dimension in the given situation, e.g. speed.

Thus, McConnell-Ginet suggests that intensions offer an implausible model of why substitution failure occurs in the context of adverbial man-

ner modifiers, since, intuitively, its reason is not the existence of possible worlds in which *walk* and *talk* have different extensions—even if they are co-extensive in the world under consideration. She assumes that the idea to account for substitution failure with manner adverbs in terms of intensionality is rooted in the fact that the pre-theoretical notion of *meaning* is equated with the technical notion of *intension*, which implies the construction of possible worlds. Consequently, the intuition that *quickly* depends on the meaning of the verb it modifies gets formulated in terms of possible worlds. (The same logic has been applied in the case of manner adjectives as well, as we saw above.)

McConnell-Ginet (1982) also proposes what may be a more plausible alternative explanation of substitution failure with manner adverbs, viz., the presence of an "added dimension", such as, for instance, speed in the case of *quickly*. She further supports this point by noting the possibility of substitution failure with verb complements as an additional "dimension", for which an analysis in terms of intensions would not be a viable option at all (McConnell-Ginet, 1982, 163):

> [...] suppose that those who eat are (in a given situation) co-extensive with those who cook. It does not follow that those who cook fish are the same as those who eat fish. Cooks may have different specialties—several may pool resources for the common meal. We don't have to go to situations where cooks and eaters fail to be co-extensive: all we have to do is look to further specification of this situation, viz. to what is being cooked and being eaten. Cooking fish and eating fish can be distinguished in a model that does not distinguish cooking and eating, with no appeal to alternative situations.

Substitution failure with manner adverbs is now standardly assumed not to be an issue of intensionality. Rather, following Reichenbach (1947) and Davidson (1967), it is believed to be due to the fact that verbs have an event argument, which manner adverbs are co-predicated of; this captures in a different way the intuition that manner adverbs depend on the meaning of the verbs they modify. Therefore, even if those who walk are co-extensive with those who talk, the respective events are still different, and quickness of the one event does not imply quickness of the other. In other words, substitution failure occurs in this case because (2.25a) does not entail (2.25b) on simple first-order extensional grounds—not because (2.24a) does not entail (2.24b) on second-order intensional grounds.

(2.24) a. $\forall x\ [\mathbf{walk}(x) \leftrightarrow \mathbf{talk}(x)]$
b. $\forall x\ [(\mathbf{quickly}(^{\wedge}\mathbf{walk}))(x) \leftrightarrow (\mathbf{quickly}(^{\wedge}\mathbf{talk}))(x)]$

(2.25) a. $\forall x\ [\exists e\ [\mathbf{walk}(x)(e)] \leftrightarrow \exists e\ [\mathbf{talk}(x)(e)]]$
b. $\forall x\ [\exists e\ [\mathbf{walk}(x)(e) \wedge \mathbf{quickly}(e)] \leftrightarrow \exists e\ [\mathbf{talk}(x)(e) \wedge \mathbf{quickly}(e)]]$

Turning back to the adjectival domain, substitution failure with manner adjectives obviously occurs for the same reason as substitution failure with manner adverbs, and thus McConnell-Ginet's argumentation can be extended to the former as well, as argued at length by Larson (1998). In particular, an analysis in terms of intensionality is intuitively inadequate also for manner adjectives, while a more adequate approach would be to assume that an implicit event is present in the semantic structure of NPs that contain a manner adjective. Section 2.2.1 will present further arguments in favor of this assumption, and some existing analyses based on it will be discussed in section 2.2.2. Before, however, let us address another problem with Siegel's analysis of manner adjectives that also comes from the idea that they depend on the meanings of their modified nouns.

The intuition concerning the semantic dependence of non-intersective adjectives on their modified nouns is implemented in Siegel's analysis by treating them as intensional modifiers: Given that such adjectives denote functions that apply to the denotations of the nouns they modify, intensions are the only set-theoretic mechanism for distinguishing co-extensive nouns (cf. McConnell-Ginet, 1982, 163). We have already seen above that in the case of manner adjectives, intensionality is unlikely to be the right approach. What is more, there are in fact reasons to doubt that manner adjectives depend on their modified nouns at all. Let us see why.

An immediate problem for the analysis of manner adjectives as modifiers of the intensions of common nouns is the fact that they can be used predicatively. For instance, predicative *beautiful* in the example in (2.26) from McNally & Boleda (2004, 180) has a non-intersective reading along with an intersective one. Its non-intersective reading is in fact even more natural in this context.

(2.26) Look at Olga dance – she's beautiful!

This problem is circumvented in Siegel's analysis insofar as non-intersective adjectives are assumed to be never predicative in the underlying structure. Their predicative position in the surface syntax, as in the case of *beautiful* in (2.26) on its non-intersective reading, is supposed to origi-

nate from the fact that they modify a covert dummy noun Δ in this case, as demonstrated in (2.13a). Since Δ is meant to be interpreted according to the context, it may also be specified as 'dancer' in the context of (2.26), which would account for its most natural interpretation.

The situation is, however, different with (overtly) attributive manner adjectives. Their non-intersective interpretation is bound to the intension of the modified noun on Siegel's analysis and cannot be specified contextually. For example, *good* in (2.14a), repeated below for convenience, can only mean 'good as a lutist' according to M. Siegel (1976, 74–75).

(2.27) That is a $\text{good}_{\text{CN/CN}}$ lutist.

Yet in fact, the interpretation of the attributive *good* in (2.27) is not restricted to 'good as a lutist', but may also be determined contextually, like in the predicative position. That the semantic dependence of manner adjectives can go beyond the meanings of their modified nouns has been aptly put by Beesley (1982, 221) in the following passage:

> Siegel, however, is wrong. Semantically, it is indeed possible, despite her objections, to read the *good* in sentence [(2.27)] as 'good as a chess player'. Hare (1957), Sampson (1970) and Keene (1961) have shown the futility of trying to derive standards of evaluation from the meaning of modified nouns, and they have shown how context can override even the strongest hints of functional nouns. Consider the hypothetical case of a chess school which specialises in teaching musicians. When asked how lutists, as opposed to oboists, take to chess, an instructor might say, 'We get some good lutists and some bad lutists'. In this context, the goodness will be relative not to lute playing but to chess playing. (Syntactically, Siegel errs in presenting the reading she wants to reject in a way which is ungrammatical in surface English. Adjectives with explicit complements cannot be preposed, so *good as a chess player lutist* is simply ungrammatical. The reading becomes clear and acceptable when the phrase is postposed: 'That is a lutist good as a chess player'.)

Examples like this one from Beesley, in which *a good lutist* is understood as 'a lutist good as a chess player' in the context of a chess school for musicians, show that attributive manner adjectives need not be interpreted relative to the meaning of the modified nouns. In general, the less

"functional" the noun is, the easier it permits interpretational variability across contexts when it is modified by a manner adjective (cf., e.g., Hare, 1957; Vendler, 1968). For instance, *a fast horse* is likely to be interpreted as 'a horse that runs fast' in the context of a race, as 'a horse that works fast' in an agricultural context, as 'a horse that learns fast' in the context of circus training, and so on (cf. Lapata & Lascarides, 2003).

The possibility to interpret attributive manner adjectives not relative to the meanings of the nouns they combine with is a serious problem for Siegel's analysis. There is no way to account for such contextually determined interpretations on the assumption that non-intersective adjectives denote intensional modifiers, as, in this case, nothing else but the intensions of their head nouns can be taken by them as an argument.

A related problem for Siegel's analysis comes from the fact that manner adjectives can modify nouns like *person*, *woman*, *guy*, etc., which are "semantically bare", using Bolinger's (1967) words:

(2.28) Propelled by a double-bladed paddle, a capsized kayak could be righted by a skillful person without taking in any water by rolling full circle.[12]

The most natural interpretation of *a skillful person* in the context of the example (2.28) is 'a person which is skillful at righting a kayak'. Yet, this interpretation cannot be accounted for by Siegel's analysis, because according to it (the non-intersective version of) *skillful* must modify the intension of the noun *person*. Hence, *a skillful person* can be interpreted only as 'a person which is skillful as a person', which presumably means something along the lines of 'a person who is generally skillful'. In other words, because of a very general semantics of the noun *person*, the non-intersective interpretation of *a skillful person* is not much different from its intersective interpretation on Siegel's analysis (recall that *skillful* is a doublet according to Siegel, see (2.6c)). Other, more specific, interpretations of this phrase, such as its most natural interpretation in (2.28), are not accounted for by her analysis and, moreover, are predicted not to be available, contrary to fact (cf. Beesley, 1982, 214–215, 221–222).

Let us sum up. We have seen that *a good lutist* can be interpreted as 'a lutist who is good as a chess player' and *a skillful person* as 'a person who is skillful at righting a kayak'. Such examples show that the interpretation of manner adjectives relative to the meanings of their head nouns

[12] http://www.musicoterapias.net/coppermine/albums/Documentos/013_Indian_Culture.pdf

is not the only possible one—even if it is a natural *default* interpretation in many cases. Thus, not only there are reasons to doubt that intensions are relevant for the semantics of manner adjectives, but, more generally, the source of the semantic 'relativity' of manner adjectives seems not to be the modified nouns. Assuming that Siegel's intensional account is not on the right track, section 2.2 below proceeds to a prominent alternative approach in terms of events.

2.2 Events

2.2.1 Connoting a verbal structure

The observation that such adjectives as *good*, *fast*, or *skillful* give rise to substitution failure goes back at least as far as Aristotle, who concluded from it that these adjectives attribute properties to individuals relatively to their *functions*. In formal semantic theories of adjectival modification in the Montagovian tradition, in particular, in M. Siegel (1976), this old intuition concerning functions gets formulated in terms of the semantic dependence of these adjectives on the meanings of the nouns they modify, and is formalized as modification of the *intensions* of the latter. However, the informal notion of functions has been conceived by other authors also in different ways than in terms of common noun intensions; in particular, Vendler (1963, 1968) understands it as 'verb classes', or 'sets of activities'. As such, his account is therefore a predecessor of modern eventive analyses of manner adjectives, which will be discussed in section 2.2.2. In what follows, I will thus first sketch Vendler's observations concerning manner adjectives, which speak in favor of analyzing them as event modifiers.[13]

Vendler's starting motivation for categorizing adjectives into classes is the observation that not all attributive adjectives conform to the transformational rule in (I), where A and N represent an adjective and a noun, respectively. Translated into semantic terms, this means that not all adjectives can be treated as first-order properties of individuals.

(I) A N $\rightsquigarrow$ N wh... is A (Vendler, 1968, 88)

[13] In fact, in Vendler's classification of adjectives, manner adjectives are categorized into two classes: A_3's and A_4's. The former category consists of agent-oriented manner adjectives, such as *skillful* in *skillful dancer* or *fast* in *fast runner*; the latter category contains theme-oriented manner adjectives, such as *easy* in *easy text* or *comfortable* in *comfortable chair* (cf. section 1.1). In what follows, I will, however, mainly concentrate on Vendler's characterization of A_3's, as they are in the focus of this thesis.

The transformation in (I) is suitable for adjectives like *red*, cf. (2.29), which Vendler labels therefore as A_1's, but not for such adjectives as, for instance, the ones in (2.30):

(2.29) red balloon $\leftsquigarrow$ balloon which is red

(2.30) a. utter fool
b. nuclear scientist
c. slow dancer

Specifically for manner adjectives, such as *slow* in the example above, Vendler suggests that their transformational source is rather the one represented in (III), where V stands for the appropriate verb or verb class ('+' indicates that the verb may be followed by an object) and D_A stands for the adverb formed from A, usually by means of the suffix *–ly*:[14]

(III) A N $\leftsquigarrow$ N wh... [V+] D_A (Vendler, 1968, 92)

Thus, adjectives that obey the transformational schema in (III), that is, A_3's, are "not tied to the subject by the copula, but by another verb" (Vendler, 1963, 450). Vendler assumes that this verb is morphologically recoverable from the modified noun in cases when the latter is deverbal, as in (2.31a). By contrast, when the modified noun is not deverbal, it is the co-occurrence of a particular adjective and noun that determines the

[14] In fact, for an adjective to be an A_3 (i.e., a manner adjective), D_A in (III) has to be specifically a *manner* adverb, and not just the adverb that is derived from A, as is formulated by Vendler. This additional restriction allows to distinguish A_3's not only from A_1's (i.e., Siegel's intersective adjectives), which do not permit adverbial transformations, but also from other non-intersective adjectives, for which the paraphrases with their adverbial counterparts are possible, but the latter belong to other semantic classes than manner adverbs (see also fn. 10 in section 2.1.3.1 as well as (3.42)). Below are some illustrative examples of such adjectives, not all of which have been discussed by Vendler and have found a place in his taxonomy.

(i) a. a blond dancer (A_1)
$\nsim$ *someone who dances blondly/in a blond way (no adverb)
b. a possible winner (A_7)
$\sim$ someone who will possibly win (modal adverb)
c. an utter fool (not definitely classified by Vendler)
$\sim$ someone who is utterly a fool (degree adverb)
d. a former actor (not discussed by Vendler)
$\sim$ someone who was formerly an actor (temporal adverb)

The unavailability of the periphrastic form "*in a(n) A way*" for the adverbs above shows that they are not manner adverbs.

appropriate verb or family of verbs, cf. (2.31b) and (2.31c), respectively.

(2.31) a. slow dancer $\rightsquigarrow$ dancer who dances slowly

b. just king $\rightsquigarrow$ king who rules justly
fast horse $\rightsquigarrow$ horse which runs fast

c. careful scientist $\rightsquigarrow$ scientist who $\begin{bmatrix}\text{performs}\\ \text{experiments,}\\ \text{observes,}\\ \text{reasons,}\\ \text{writes,}\\ \text{etc.}\end{bmatrix}$ carefully

In other words, Vendler believes that every NP which contains an A_3 "connotes a verbal structure" (Vendler, 1963, 448). Moreover, he assumes that adjective–noun combinations of this type determine exactly one relevant verb or one relevant family of verbs, which is either morphologically recoverable from or associated with the modified noun.[15]

The latter assumption is problematic for reasons discussed in section 2.1.3.2 in connection with Siegel's analysis. In particular, Vendler makes

[15]Interestingly, Vendler (1968, 99) argues that the situation is different in the case of theme-oriented manner adjectives, i.e., A_4's (see also Vendler, 1963, 461–464):

> In connection with A_3N's we remarked that some such combinations are incomprehensible because the pair fails to pick out an appropriate verb-class. Think of *slow table* or *good planet*. A similar situation can occur in the case of A_4N's, for the same reasons. Thus, while *difficult language* or *comfortable chair* are readily understood, *difficult tree* or *easy planet* remain mysterious. Here, however, differently from the case with A_3N's, it is easy to add the relevant verb:
>
> This tree is difficult to grow
> Venus is an easy planet to observe.
>
> This device can even overrule the verb-class naturally associated with a particular A_4N. Take *good shoe*. A good shoe, presumably, is good for wearing, walking in, and so on. Yet the Arctic explorer might throw out all this in favor of a verb of his own choice:
>
> This is a good shoe to eat.

However, Vendler overlooks the fact that also in the case of A_3's the relevant verb can be explicitly specified by a special construction analogous to *to*-infinitives of A_4's, namely, by prepositional gerunds illustrated below in (2.34). In addition, the problem with his particular examples above, *slow table* and *good planet*, is that *table* and *planet* do not make good external arguments, while this is the role which they need to play in the relevant event when modified by agent-oriented manner adjectives (see section 4.2 for the analysis). Therefore, it is difficult to come up with plausible prepositional gerunds for these examples.

the relevant verb dependent on the meaning of the modified noun, thus, like Siegel, neglecting the possibility of contextually determined interpretations of NPs that contain A_3's (cf. Beesley, 1982, 214). Picking up the example from section 2.1.3.2, *good lutist* need not be interpreted as 'lutist who plays the lute well'; in an appropriate context it may also be interpreted as, for instance, 'lutist who plays chess well'.

However, what is more important for us here is Vendler's general idea that NPs containing manner adjectives derive from a verbal structure in which their adverbial counterparts modify some suitable verb. Insofar as verbs are now standardly analyzed as denoting predicates of events, this idea of Vendler may be translated into modern semantic terms by saying that the interpretation of manner adjectives always requires the presence of an implicit event, even when they modify individual-denoting nouns.

Put somewhat differently, Vendler points out the relatedness between manner adjectives and adverbs, which manifests itself through the possibility to paraphrase nouns with manner adjectives as verbs with the corresponding manner adverbs. An analysis which captures this relatedness is advantageous insofar as it establishes a unification in the treatment of adverbial and adjectival manner modification. Siegel's intensional theory provided such a unification in the early history of formal semantics, when manner adverbs were treated as intensional modifiers. Yet currently, they are standardly analyzed as event modifiers, and, hence, it is event-based analyses of manner adjectives that have the potential of bridging the gap between adjectival and adverbial manner modification.

Thus, Vendler assumes that the property denoted by a manner adjective is not attributed to a thing directly, as in the case of A_1's, but "only with respect to an appropriate action involving that thing" (see Vendler, 1963, 448). The assumption that an implicit event is involved in adjectival manner modification is further supported by two facts about it. Note that these facts, as well as the transformability into manner adverbs, are characteristic exclusively of manner adjectives, distinguishing them from other types of Siegel's non-intersective adjectives.

First, the implicit event in NPs which contain an individual-denoting noun modified by an A_3 can be made explicit by means of paraphrases in which the adjective is directly predicated of an appropriate event noun, as in the following examples:[16]

[16]The paraphrases in (2.32), as well as those in (2.34), represent only one possible interpretation of the phrases in question, since the relevant event made explicit in the form of an event nominal or gerund may be any contextually provided event.

(2.32) a. He is a slow dancer.
∼ His dancing is slow.
b. He is a careful worker.
∼ His work is careful. (Vendler, 1968, 90)

Furthermore, Vendler argues that, when applied to event nominalizations, A_3's follow the transformational rule in (I) and that, in this sense, they "are primarily suited for e's and only indirectly for ordinary nouns" (Vendler, 1968, 90):[17]

(2.33) a. slow dance ⇜ dance that is slow
b. careful work ⇜ work that is careful

Second, the relevant verbal structure in NPs that contain individual nominals modified by A_3's can surface as prepositional gerunds typically headed by *at* or *in*, as in the examples below:

(2.34) a. He is a good dancer.
∼ He is good at dancing.
b. He is a careful observer.
∼ He is careful in observing. (Vendler, 1968, 91)

Such gerunds specify the relevant event with respect to which manner adjectives are interpreted when they modify individual nouns. Therefore, when an eventive gerund of this type is present, the contextual variability of this event is no longer possible (the same also holds for cases in which the event is specified by an event nominal, as in (2.32)). Anticipating the discussion in section 4.2, this fact will serve as one of the arguments for assuming that precisely such gerunds are the source of the implicit event in the semantic structure of NPs containing an individual noun modified by a manner adjective, being overtly or covertly present in them.

Finally, let me mention in this connection another fact about manner adjectives, which has been noted by Vendler. In particular, Vendler (1968, 89) points out that A_3's cannot be conjoined with A_1's in the attributive position, as his examples in (2.35) show. More specifically, ambiguous adjectives like *beautiful* can have only an intersective reading in conjunction with A_1's and only a manner reading in conjunction with A_3's, while non-

[17] In Vendler's (1968) nomenclature, "e's", or "e-nominals", are deverbal event nouns of the variety known as "perfect nominals" from Vendler (1967). Notice that "e" does not stand for "event" in this case, but has to do with Vendler's alphabetically ordered classification of nominalizations. See section 4.1.2 for a discussion of perfect nominals.

ambiguous manner adjectives such as *slow* are infelicitous in conjunction with intersective adjectives altogether.

(2.35) a. She is a blonde and beautiful dancer.
b. She is a slow and beautiful dancer.
c. *She is a blonde and slow dancer. (Vendler, 1968, 89)

Let us sum up the discussion so far. Several arguments speak in favor of an event-based approach to manner adjectives. One of them has to do with the consideration that it would provide a unification in the analyses of adjectival and adverbial manner modification, which is desirable given an obvious semantic relatedness between manner adjectives and manner adverbs. Another argument comes from the data concerning event nouns and gerunds, cf. (2.32) and (2.34), which suggest that the modification of individual nouns by manner adjectives implies the presence of an implicit event. These data were not considered by Siegel and cannot be accounted for by her analysis, which is not based on the assumption that events are an independent semantic type. Note, finally, that an event-based analysis would also account for substitution failure with manner adjectives, as has already been discussed earlier in section 2.1.3.2.

In section 2.2.2 below, I will outline two existing event-based analyses of manner adjectives, proposed by Croft (1984) and Larson (1998), which differ in several important respects. One of them concerns the argument structure of manner adjectives: While Croft assumes that manner adjectives are predicated of individuals *with respect to* events, Larson's theory relies on a stronger hypothesis that they are predicated *of* events even in cases when they modify individual nouns.[18] Another difference concerns the source of the implicit event: According to Croft, the relevant event is introduced in the semantics of prepositional gerunds illustrated in (2.34); Larson, by contrast, suggests that the event comes from the semantics of the modified nouns. After Croft's (1984) and Larson's (1998) approaches have been introduced in sections 2.2.2.1 and 2.2.2.2, respectively, section 2.2.2.3 will consider in more detail the idea that it is the semantic structure of individual-denoting nouns that is the source of the relevant event in adjectival manner modification. We will see that this idea can, in fact, not be maintained under standard semantic and syntactic assumptions.

[18]The possibility of these two alternatives is echoed in Vendler's work, who, on the one hand, characterizes A_3's as being attributed to individuals with respect to actions associated with them, but, on the other hand, considers A_3's as being primarily suited for event nominals.

2.2.2 Eventive analyses

2.2.2.1 Croft (1984)

The analysis developed by Croft (1984) is, to my knowledge, the earliest event-based account of manner adjectives, which explicitly aims to establish a semantic connection between manner adjectives and adverbs. Croft argues that the primary use of manner adjectives/adverbs is as modifiers of events. This use manifests itself overtly in the adverbial form, as, e.g., in (2.36), and in the adjectival form, but in the latter case only when the adjective modifies an event nominalization, as in (2.37).[19]

(2.36) a. Gerald slowly picked himself up off the floor.
b. Marcel successfully merged his company with Limelight Industries.

(2.37) a. The destruction of the city by the Germans was rapid.
b. The merger of the two chemical companies was successful.
(Croft, 1984, 23)

Thus, Croft assumes that manner adjectives that modify event nouns and their adverbial counterparts are semantically *identical*—they denote predicates of events, cf. (2.40) below. By contrast, manner adjectives that modify individual nouns, as in (2.38), are analyzed differently by him.

(2.38) a. Muhammed is slow.
b. Marcel is successful.

He argues that in such cases there is an understood *role* in which the subject is slow or successful. This role may remain implicit, as in (2.38), or it can be made explicit by means of *at*/*in*-gerunds, as in the following examples (cf. Vendler's examples of the same construction in (2.34)):[20]

(2.39) a. Muhammed is slow at learning languages (but fast at programming).
b. Marcel is successful in merging companies (but not at composing operas).

[19] Recall in this connection Vendler's (1968) characterization of A_3's as being primarily suited for event nominals, as discussed in the previous section.

[20] Croft (1984, 21, 24) points out that the sentences in (2.38) can also be interpreted "generically", i.e., as saying that Muhammed/Marcel are, as a rule, slow/successful in *any* activity they might undertake, that is, in whatever they do. On this reading, the role argument is assumed by Croft to be bound by a generic quantifier.

The uses of manner adjectives applied to individual-denoting nouns, as in (2.38) and (2.39), are, according to Croft, "secondary applications" that are derived from the primary denotations of manner adverbs/adjectives as one-place event predicates, as in (2.36) and (2.37). In particular, they are two-place predicates taking an individual and a role argument, a role being understood as "a generic activity such as running or learning languages, in which the individual mentioned in the other argument of the predicate is interpreted as the agent" (Croft, 1984, 24).[21] Thus, while the original denotations of manner adverbs/adjectives are of the general form $\mathbf{P}(e)$, the derived denotations of manner adjectives modifying individual nouns have the form $\mathbf{P}(r, x)$, which reads as 'x is $\mathbf{P}$ at doing r', where r is a variable over roles. Accordingly, Croft assumes the following semantic representations for sentences containing a manner adverb in its original version and a manner adjective in its derived version, illustrating it on Siegel's well-known example, cf. (2.11):[22]

(2.40) Marya dances beautifully.
$\exists e\ [\mathbf{dance}(e, \mathbf{marya}) \wedge \mathbf{beautiful}(e)]$

(2.41) Marya is a beautiful dancer.
$\mathbf{dancer}(\mathbf{marya}) \wedge \exists r\ [\mathbf{beautiful}'(r, \mathbf{marya})]$

Importantly, Croft points out that the role argument in the two-place predicate $\mathbf{beautiful}'$, which is derived from the one-place event predicate **beautiful**, need not necessarily refer to the role associated with the head noun, that is, to dancing in the example above. However, he remarks that for manner adjectives used attributively, as in (2.41), it is more difficult to be interpreted with respect to a role different from the one suggested by the lexical semantics of the modified noun, than for manner adjectives used predicatively.

[21] The intuition that the activity associated with manner adjectives is "generic" has been expressed already by Vendler, who noted that "A_3's are pertinent to what a thing can do or habitually does, but A_4's are pertinent to what can be done or habitually is done with the thing" (Vendler, 1968, 99–100). This intuition is also reflected in the analysis proposed by Larson (1998), as we will see in the next section. Yet non-generic interpretations are, in fact, possible too, cf. section 4.2.

[22] The sentence in (2.41) has two interpretations because *beautiful* is ambiguous, as already discussed before. Its second reading is formalized by Croft as follows:

(i) $\mathbf{dancer}(\mathbf{marya}) \wedge \mathbf{beautiful}(\mathbf{marya})$

Here, **beautiful** is a predicate of individuals, and thus it is distinct from **beautiful** in (2.40), which is a predicate of events.

To conclude, let us briefly evaluate the advantages and disadvantages of Croft's analysis. **On the one hand**, his attempt to achieve unification in the semantic analysis of manner adverbs and adjectives does not quite succeed, since the semantics of manner adjectives that modify individual nouns is still different from the semantics of manner adverbs and manner adjectives that modify event nouns, even if it is related to it.

Furthermore, Croft extends, without much justification, the ontology of basic semantic types by introducing roles into it. Notice, though, that in fact roles need not necessarily be implemented as a separate semantic type, but may also be simply understood as a shorthand term for generically quantified events—Croft himself alludes to this possibility referring to roles as "generic activities". Moreover, if roles are formalized as generic events, the derivation of the secondary denotations of manner adjectives as two-place predicates of roles and individuals from their primary denotations as one-place predicates of events becomes more transparent, just implying the addition of an individual argument.

On the other hand, a strength of Croft's analysis of manner adjectives (in the light of the discussion in section 2.1.3.2) is that the relevant role does not have to be associated with the modified noun—because the source of roles are assumed to be *at*/*in*-gerunds. This assumption will in fact also be made in this thesis, see the analysis in section 4.2.

Finally, Croft does not assume that manner adjectives are subject to a systematic intersective/non-intersective ambiguity, like it is the case on Siegel's analysis. Recall that, according to Siegel, adjectives such as *slow* and *successful* in Croft's examples in (2.38) have an intersective meaning as properties of individuals (i.e., 'generally or absolutely slow/successful') along with a non-intersective one (i.e., 'slow/successful with respect to a certain function'), cf. (2.10). By contrast, Croft suggests that the "intersective" interpretations originate not from a separate meaning of manner adjectives, but rather from the fact that the role argument is bound by a generic quantifier in these cases (see fn. 20 above). In this way, he avoids complicating the lexicon by introducing a large number of doublets with two related but distinct lexical entries.

2.2.2.2 Larson (1998)

A more recent well-known event-based analysis of manner adjectives has been given by Larson (1998). Larson's aim is to account for differences in interpretation in adjectives like *beautiful*, which are analyzed by Siegel as ambiguous between an intersective and a non-intersective reading. Thus,

he cites the example in (2.42), adopted from Siegel, cf. (2.11), and claims that the same sort of ambiguity in fact arises with many other adjectives as well, such as, for instance, the ones in (2.43).

(2.42) Olga is a beautiful dancer.
∼ 'Olga is a dancer and Olga is beautiful.'
∼ 'Olga is beautiful as a dancer.'/'Olga dances beautifully.'

(2.43) a. Kathrin is an intelligent student.
b. George is a skillful manager.
c. Yo-yo is a good cellist.
d. Bill is a diligent president.
e. Peter is an old friend.

As has already been discussed in section 2.1.3.2 above, Larson (1998) extends McConnell-Ginet's (1982) arguments against analyses of manner adverbs in terms of intensions to Siegel's analysis of manner adjectives as intensional predicate modifiers. Further, he argues that also with respect to manner adjectives, an approach in terms of events is a more adequate alternative and, more specifically, suggests to analyze them as predicates of events. In order to be able to do so, Larson proposes to "relativize" the semantics of common nouns to events, that is, to assume that the semantic structure of (individual-denoting) nouns contains an event argument, in addition to their individual argument. Thus, according to Larson, the ambiguity of the examples in (2.42) and (2.43) "arises from complexity in the semantic structure of the nominal, and not from the adjective", like in Siegel's theory (cf. Larson, 1998, 164). Accordingly, Larson's semantic representations of the two interpretations of (2.42) are as below, where $\mathcal{Q}$ stands for an underspecified event quantifier and $\mathbf{C}$—for the comparison class relative to which *beautiful* applies:[23]

(2.44) Olga is a beautiful dancer.
a. $\mathcal{Q}e$ [$\mathbf{dancing}(e, \mathbf{olga})$ ... $\mathbf{beautiful}(\mathbf{olga}, \mathbf{C})$]
b. $\mathcal{Q}e$ [$\mathbf{dancing}(e, \mathbf{olga})$ ... $\mathbf{beautiful}(e, \mathbf{C})$]

[23] Larson claims that his analysis ascribes hidden semantic complexity to the nouns rather than to the adjectives in (2.42) and (2.43) and in this way avoids considerable duplication in the lexicon associated with Siegel's analysis. This is not really the case though, as the adjectives in these examples have two distinct lexical entries under his analysis as well, one as a property of individuals and one as a property of events. And while ambiguity of this sort seems to be legitimate in the case of *beautiful* and *old*, it is doubtful that the other adjectives in (2.43) are ambiguous in the same way, as has already been discussed before (see fn. 6 in section 2.1.2).

Thus, Larson argues that the ambiguity of the sentence above results from the fact that *beautiful* can be predicated either of the individual argument or of the event argument in the semantic structure of the noun, and that the same holds for the adjectives in (2.43) as well. By contrast, adjectives like *aged* denote, according to him, exclusively properties of individuals, while adjectives like *former*—exclusively properties of events, as shown below.

(2.45) Jerry is an aged president.

a. $\mathcal{Q}e$ [**presidency**$(e, \mathbf{jerry})$ ... **aged**$(\mathbf{jerry}, \mathbf{C})$]
b. $\#\mathcal{Q}e$ [**presidency**$(e, \mathbf{jerry})$ ... **aged**$(e, \mathbf{C})$]

(2.46) Jerry is a former president.

a. $\#\mathcal{Q}e$ [**presidency**$(e, \mathbf{jerry})$ ... **former**$(\mathbf{jerry}, \mathbf{C})$]
b. $\mathcal{Q}e$ [**presidency**$(e, \mathbf{jerry})$ ... **former**$(e, \mathbf{C})$]

Finally, Larson points out a close semantic relation between sentences which contain predicate nominals and habitual sentences. Since the latter are standardly analyzed in terms of generic quantification (see Krifka et al., 1995, among many others), he suggests that a natural candidate for the event quantifier $\mathcal{Q}$ in nominals is also the generic quantifier. In fact, Larson even assigns identical semantic representations to these two sorts of sentences, as shown by the logical forms below, in which **Con** provides the restriction to contextually relevant events containing Olga:[24]

[24] In this connection, Larson makes reference to Chierchia (1995), who also assumes that the generic quantifier is present in predicate nominals, cf. his semantic representation below (Chierchia, 1995, 198–199):

(i) John is a smoker.
GENs [**in**$(\mathbf{john}, s)$] [**smoker**$(\mathbf{john}, s)$]

However, the role of the generic quantifier in these two analyses seems to be different. Chierchia uses genericity in order to account for the temporal stability of individual-level predicates, which, according to him, subsume predicate nominals. The temporal stability of a predicate nominal such as *smoker* implies that, if John is a smoker, he is a smoker in every moment, and not only when he actually smokes. Accordingly, the semantic structure in (i) above represents a generic series of states of John's being a smoker, rather than a generic series of events of John's smoking (note that the predicate in the scope of GEN in (i) is **smoker**, and not **smoking**). Larson, by contrast, seeks to relate the semantics of deverbal nominals like *dancer* to the events denoted by their base verbs, such that these events can then be modified by manner adjectives (note that the predicate in the scope of GEN in (2.47) is **dancing**, and not **dancer**).

Note, however, that in fact *–er* nominals are not always interpreted generically, but can sometimes also have an episodic interpretation (cf. section 4.2.4.2).

(2.47) a. Olga is a dancer.
b. Olga dances.
GENe [**Con**$(e, \mathbf{olga})$] [**dancing**$(e, \mathbf{olga})$]

(2.48) a. Olga is a beautiful dancer.
b. Olga dances beautifully.
GENe [**Con**$(e, \mathbf{olga}) \wedge$ **dancing**$(e, \mathbf{olga})$] [**beautiful**$(e, \mathbf{C})$][25]

Taking stock, the merit of Larson's analysis of manner adjectives, as compared to Croft's analysis discussed before, is the fact that, according to it, the semantics of manner adjectives is the same as the semantics of their adverbial counterparts on the standard analysis of manner adverbs in terms of predicates of events. In other words, it provides unification in the analyses of adjectival and adverbial manner modification. This merit is, however, counterbalanced by a major problem that Larson's approach faces. Namely, it does not show in a compositionally transparent way how manner adjectives access the event argument in the semantic structure of deverbal individual-denoting nominals, and it also does not explain where the necessary event variable comes from in cases when manner adjectives modify non-deverbal individual-denoting nominals. Let us consider these issues in more detail.

Larson claims that the semantic structure of individual nominals (at least, of deverbal ones) contains an additional event argument along with their individual argument, and that manner adjectives are predicated of this event argument. Accordingly, the semantics of, for instance, the noun *dancer* is represented by Larson as **dancing**(e, x), which is identical with the denotation of its base verb. However, it is unclear how Larson derives this semantic representation containing the predicate **dancing** from the surface form 'dancer'. In other words, as long as it is not shown that the internal structure of the noun *dancer* yields the predicate **dancing** compositionally and that the event argument of this predicate is accessible to manner adjectives, the insertion of an event argument into the semantics of *dancer* is a purely stipulative move. Even though Larson himself does

[25] In determining the restrictor and the scope of the generic quantifier, Larson follows Diesing's (1992) *Mapping Hypothesis*, according to which the restrictor is mapped from higher, while the scope from lower material in the syntactic structure. Therefore, in order to achieve the partition of the tripartite structure associated with the generic quantification in (2.48), in which the adjective corresponds to the nuclear scope, while the restriction is specified by the noun, Larson has to assume that attributive manner adjectives are generated post-nominally. See Egg (2008, 155–156) for some discussion of this aspect of Larson's analysis.

not spell out the details of how the semantics of a (deverbal) individual-denoting nominal provides an event accessible to manner adjectives, the question is if it can provide it in principle. This question will be addressed at length in the next section.

2.2.2.3 Noun semantics as source of event

The morphosyntactic structure of deverbal individual-denoting nominals, in particular of *–er* nouns, such as *dancer*, is indeed standardly assumed to contain verbal layers (see, e.g., van Hout & Roeper, 1998; Ntelitheos, 2006; Baker & Vinokurova, 2009; Alexiadou & Schäfer, 2010, to name a few). The presence of a verbal structure implies the presence of an event argument, as desired. However, it does not automatically follow from this fact that this event argument is accessible to manner adjectives, so that they can be predicated of it.

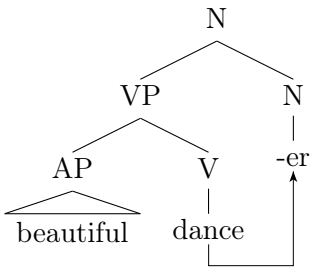
Analyzed as event predicates, manner adjectives in fact do not seem to be able to access the event argument of the base verbs of *–er* nominals under standard syntactic and semantic assumptions. These assumptions include, minimally, that adjectives are nominal, and not verbal, modifiers and that there is only one open argument at the level of the entire individual-denoting nominal, independently of whether it is deverbal or not, namely, its individual argument. Hence, the problem is that the manner adjective and the base verb are intervened by the nominalizing suffix *–er*, after the application of which the event argument of the base verb is no longer open. In other words, we are dealing here with an instance of the so-called *bracketing paradox* (cf. Williams, 2003, 6): The desired order of the *semantic* composition, whereby the adjective would combine with the verb before the suffix *–er* applies, does not match with the actual order of the *morphosyntactic* composition, according to which the adjective combines with the entire *–er* nominal, i.e., after *–er* applies. The two orders are represented by the bracketing in (2.49a) and (2.49b), respectively:

(2.49) a. [[beautiful dance] -er]
b. [beautiful [dance -er]]

This bracketing paradox can be resolved, however, if one of the "standard" assumptions mentioned above is abandoned. Thus, **one** possibility is to allow AP-adjunction to verbal projections, which will enable manner adjectives to modify the base verbs of *–er* nominals, that is, semantically, to be predicated of their event argument, which is still open at this point

of derivation. This possibility is discussed, e.g., in Egg (2008, 159–160), who illustrates it by the following structure:[26]

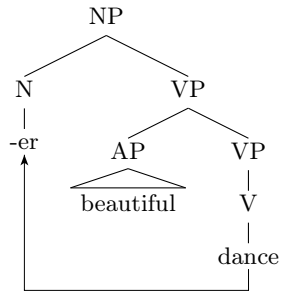
(2.50)



However, to allow AP-adjunction to verbal projections means to radically change the syntactic selectional restrictions of APs as nominal modifiers, which will lead to massive overgeneration elsewhere. Egg too rejects the approach in (2.50), although not because it implies AP-adjunction to VP, but because it implies the *syntactic* decomposition of *–er* nominals.[27] Instead, he suggests to decompose *–er* nominals only *semantically*, keeping the underlying syntactic structure of phrases such as *beautiful dancer* "very surface-oriented" as AP-adjunction to NP. In particular, Egg uses

[26] In order to take into account head-initialness and the assumption that a maximal projection can only adjoin to a maximal projection (cf. Chomsky, 1986), the structure in (2.50) would need to be modified along the lines of (i). In this case, some additional mechanism will be necessary to derive the pre-nominal position of the adjective, such as, e.g., AP-movement.

(i)



Note also that it is VP that is assumed to be nominalized by *–er* in (2.50) and (i); however, there are different views in the literature as to which verbal layer undergoes nominalization in *–er* nominals. See section 4.2.4.2 for references, as well as a further discussion of this issue.

[27] In fact, Egg (2008) does not argue against syntactic decomposition in the case of *–er* nouns, but claims that it is problematic in the case of change-of-state verbs. This is a reason for him to discard syntactic decomposition in both cases, since his goal is a unified analysis of reference to embedded eventualities in *–er* nominals modified by manner adjectives and in change-of-state verbs modified by *again*.

structured lexical entries for *–er* nominals which keep apart the semantic contributions of the suffix and the stem, as in (2.51a) and (2.51b) below for the noun *dancer*:[28]

(2.51) a. $[\![\text{-er}]\!] = \lambda P \lambda y.\text{GEN}e,x\ [\mathbf{in}(x)(e) \wedge y = x]\ [P(x)(e)]$
b. $[\![\text{dance}]\!] = \lambda x \lambda e.\mathbf{dance}(x)(e)$
c. $[\![\text{beautiful}]\!] = \lambda P \lambda x \lambda e\ [P(x)(e) \wedge \mathbf{beautiful}(e)]$

On the relevant event reading of *beautiful dancer*, the stem denotation in (2.51b) is first combined with the denotation of the adjective in (2.51c), while the suffix denotation in (2.51a) is applied to the result of their combination only afterwards. According to this order of the composition, the semantics of *beautiful dancer* is as desired, see below:

(2.52) $\lambda y.\text{GEN}e,x\ [\mathbf{in}(x)(e) \wedge y = x]\ [\mathbf{dance}(x)(e) \wedge \mathbf{beautiful}(e)]$

Thus Egg makes manner adjectives access the event argument embedded in the semantics of *–er* nominals before the application of the suffix *–er* without getting the problem of AP-adjunction to VP associated with the syntactic decomposition of *–er* nominals depicted in (2.50). Yet this problem is avoided in Egg's approach simply insofar as the semantic decomposition is disassociated from the syntax. In other words, his analysis gives a solution to the bracketing paradox at issue, but pays the price of being syntactically ad hoc and losing the mapping from semantics to syntax, since relations of semantic dominance are not reflected in the syntax on this analysis. If, on the other hand, Egg's compositional semantics for *beautiful dancer* in (2.51) were to be mapped onto a syntactic structure, the corresponding syntactic structure would be the one in (2.50), and so

[28] The semantic representations in (2.51) are not exactly as given by Egg (2008), as he formalizes them using Constraint Language for Lambda Structures, an underspecification formalism whose semantic representations contain—in addition to fragments of λ-terms—also 'holes' ($\square$), i.e., not yet known parts of these fragments, and dominance relations that relate fragments to holes. In order not to complicate the presentation of Egg's analysis by these technical details, I substitute holes in his semantic representations (cf. (28) and (30) in Egg, 2008, 162, 164) by λ-abstracted variables of the right semantic type, namely, by $P_{\langle e,vt\rangle}$ in (2.51a) and (2.51c). Note also the following modifications in (2.51) as compared to Egg's semantic representations. First, unlike in (28) and (34) in Egg (2008, 162, 165), **beautiful** in (2.51c) is explicitly modeled as a property of events, as is necessary for the relevant event reading of *beautiful dancer*. Second, P in (2.51c) is modeled as a two-place relation between an individual and an event, rather than a one-place predicate as in Egg's semantic representations, which allows the denotation of *beautiful* to combine with the denotation of *dance*, as desired.

we would be back to the problem of AP-adjunction to verbal projections associated with it.[29,30]

Returning to the question of how the bracketing paradox with manner adjectives modifying *–er* nominals may be resolved, **another** possibility is to abandon the other "standard" assumption mentioned before, namely, that the only open argument at the level of the entire individual-denoting nominal is its individual argument. This strategy is employed, for instance, by Larson, as is clear from the discussion above. He assigns the noun *dancer* the semantics of **dancing**(e, x) assuming that the event variable is bound by a generic quantifier located *outside* the nominal, as shown in the following structure from Larson (1998, 156–157), where AP corresponds to a manner adjective:

(2.53) [GENe [AP N]]

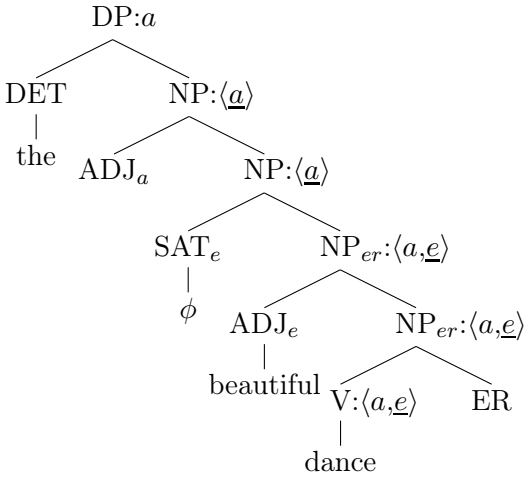
We have already discussed above that it is a rather stipulative move to represent the semantics of *dancer* in terms of the verbal-like predicate **dancing**, which has an additional event argument, unless it can be shown to be contributed by the semantics of a constituent inside the structure of *dancer*. An approach that adopts essentially the same strategy as the one used by Larson, see (2.53), but gives more consideration to the morphosyntactic structure of *–er* nominals has been proposed by Winter & Zwarts (2012). Winter and Zwarts follow the well-accepted view that *–er* nominals contain in their internal structure a verbal layer, which is nominalized by the suffix *–er*. However, they depart from the usual assumption that *–er* closes off the event argument of the base verb leaving open only its individual argument (see, e.g., Egg, 2008; Baker & Vinokurova, 2009; cf. also Alexiadou & Schäfer, 2010). Instead, they assume that both arguments, abbreviated in their representations as "e" and "a", respectively, remain open after the application of *–er* and that event saturation (quantification) is performed by a separate head ϕ located above *–er*, as

[29] It should also be pointed out in this connection that *–er* nominals are not always interpreted generically, as has already been mentioned with respect to Larson's (1998) analysis, which implies that genericity should not be encoded in the denotation of *–er* as in (2.51a). Note also that, while Larson puts **dance** in the restrictor of the generic quantifier (cf. (2.48)), on Egg's analysis it occupies the nuclear scope (cf. (2.52)).

[30] The same approach as in Egg (2008) is also used in R. Schäfer (2007) with respect to the bracketing paradox arising with frequency adjectives like *occasional* when they modify individual-denoting *–er* nominals, as in *occasional walker*. Schäfer too employs the order of the semantic composition along the lines of [[occasional walk] -er], thus disregarding the actual order of the morphosyntactic composition of this phrase.

suggested also by Larson, cf. (2.53). Thus, the morphosyntactic structure of *–er* nominals proposed by Winter and Zwarts looks as follows:

(2.54)



Within this architecture, the event argument of the base verb is open up to the level of NP_{er}, that is, until event saturation takes place. Thus, being nominal modifiers syntactically and properties of events semantically, manner adjectives (ADJ_e in (2.54)) can legitimately modify NP_{er} both from a syntactic and a semantic perspective, as NP_{er} is a nominal projection and the event argument of the base verb is still accessible at the level of NP_{er}. By contrast, "intersective" adjectives denoting properties of individuals (ADJ_a) adjoin to NP, i.e., after event saturation takes place and only the individual argument is open.

Thus, Winter and Zwarts' approach "de-embeds" the event argument of the base verbs of *–er* nominals from under the suffix *–er* in a primarily semantic way—by assigning *–er* a semantics that makes the event argument percolate up to a nominal layer, which manner adjectives can adjoin to. By contrast, the approach depicted in (2.50) de-embeds the event argument syntactically by allowing adjectives to be verbal modifiers and so enabling them to intrude inside the structure of *–er* nominals to modify their base verbs. However, even though Winter and Zwarts' analysis does not imply syntactic violations like the analysis shown in (2.50), it is still problematic for being syntactically ad hoc, since no independent evidence is provided for postulating two separate heads inside the structure of *–er* nominals: ER for the category change from V to N and ϕ for the change in semantics, i.e., for the saturation of the event argument. In particular, the presence of a silent functional head ϕ different from *–er* is difficult to

motivate by considerations other than the need to resolve the bracketing paradox with manner adjectives.

Let us take stock of the discussion above. On the analysis of manner adjectives as predicates of events, the attempt to derive the event predicated of by manner adjectives from the semantic structure of their (individual-denoting) modified nouns turns out to be unsuccessful even in the case of deverbal nouns: The event argument of the base verbs of deverbal nouns is inaccessible to manner adjectives being embedded in the semantics of such nouns, and this bracketing paradox can only be remedied by means of infelicitous or unmotivated semantic/syntactic stipulations.

In fact, however, a solution to this bracketing paradox, even if it were possible, or, more precisely, adequate, would be insufficient as an answer to the question of where the event comes from in general in modification of individual-denoting nouns by manner adjectives—and that for at least two reasons.

First, manner adjectives applied to deverbal individual-denoting nominals need not be interpreted as modifying the event which is provided by the semantics of their base verbs; the relevant event may also be determined contextually. For instance, the phrase *a good dancer*—a modification of Beesley's (1982) example discussed in section 2.1.3.2 such that it contains a deverbal *–er* nominal—may be interpreted as 'a dancer good at playing chess' in the context of a chess school for (different types of) artists and not as 'a dancer good at dancing', which is probably its most salient and common interpretation otherwise. However, a solution to the bracketing paradox with deverbal individual-denoting nominals modified by manner adjectives would not be able to account for such contextually determined interpretations. In other words, it would tie the interpretation of manner adjectives to the events provided by the semantics of the base verbs of their deverbal modified nouns, in a similar way as Siegel's (1976) analysis ties their interpretation to the intensions of the modified nouns, see the discussion in section 2.1.3.2. Being too restrictive in this way, a solution to the bracketing paradox in question could, thus, not be taken as a general analysis of adjectival manner modification even only of *deverbal* individual-denoting nominals.

Second, manner adjectives are also able to modify *non*-deverbal individual-denoting nominals, cf. such examples discussed by Vendler (1968) as *just king*, *fast horse*, *careful scientist*, *good father*, and so on. Obviously, a solution to the bracketing paradox with deverbal nominals would not be able to account for such cases, simply because non-deverbal nominals do not contain verbal structure. Thus, adjectival manner modification of

non-deverbal nouns requires a separate analysis, and the issue concerning the bracketing paradox with deverbal nouns is orthogonal to it.

Summing up, even if the bracketing paradox with manner adjectives modifying deverbal nominals had an adequate solution, it would not be able to account for the two cases of adjectival manner modification that are discussed above, namely, when manner adjectives modify non-deverbal nominals and when they modify deverbal nominals, but the modified event is different from the one denoted by the base verb. Thus, an independent, more general analysis would be needed for these cases anyhow. This more general analysis would then, however, be able to account also for those cases of manner modification of deverbal nominals in which the modified event is the same as the event denoted by the base verb; they would be treated just as a special sub-case. In other words, this analysis would make a separate solution to the bracketing paradox with deverbal nominals modified by manner adjectives effectively unnecessary.[31]

Thus, we are back to the question of what introduces the event in adjectival manner modification of individual-denoting nominals, including non-deverbal ones: The events denoted by the base verbs of deverbal nominals turned out not to be of any help towards answering this question. One possibility in this connection is simply to stipulate that the semantic structure of individual-denoting nominals, deverbal and non-deverbal ones alike, contains an additional event argument, which does not have a morphosyntactic correlate, i.e., a constituent in the internal structure of such nominals whose semantics contributes this event argument. Otherwise, the event necessary for manner modification needs to be looked for elsewhere than in the semantics of the modified noun.

As far as the former possibility is concerned, its implementation in a standard formal semantic framework would be difficult to justify in view of its stipulative character. Thus, for example, Larson (1998) hesitates to analyze non-deverbal nouns such as *horse* as denoting "event-individual pairs", as he does in the case of deverbal nominals such as *dancer*, whose semantics he represents as $\mathbf{dancing}(e, x)$. The reason why he is hesitant to analyze them in this way is the absence of a "reliable association" between the meaning of a non-deverbal individual-denoting nominal and a relevant "verb-like predication", i.e., an event (cf. Larson, 1998, 159–161). Taking as one of the examples the phrase *fast horse*, whose salient interpretation is 'horse that runs fast', Larson argues that it is by no means

[31] Another drawback of analyses that derive the relevant event from the semantics of modified nouns is that predicative manner adjectives must be analyzed as attributive adjectives with a silent head noun, which is necessary as the source of the event.

clear that *horse* should be closely associated with *run*. Moreover, as has already been discussed in section 2.1.3.2, 'horse that runs fast' is not the only possible interpretation of *fast horse*, which may also be interpreted as 'horse that works fast', 'horse that learns fast', etc. depending on the context.[32] However, even though Larson holds that non-deverbal individual-denoting nouns modified by manner adjectives cannot be straightforwardly incorporated into his analysis, he does not propose an alternative analysis for them, calling for a more thorough examination of individual cases first.

Nonetheless, some semantic frameworks do introduce events into the semantic structure of individual-denoting nouns, both non-deverbal and deverbal ones alike. A prominent case in point in this connection is the *Generative Lexicon* theory developed in Pustejovsky (1995). Lexical entries in the Generative Lexicon contain, among other things, fine-grained information regarding "essential aspects of a word's meaning", which are called *qualia*. Events enter such structured semantic representations of individual-denoting nominals inside the TELIC quale, which encodes the purpose or function of the object, and the AGENTIVE quale, which specifies the manner in which the object came into existence. Both of these qualia are represented in the case of an individual-denoting noun as an event predicate one of whose argument positions is filled by the variable which corresponds to the referential argument of the noun. Thus, for example, the lexical entries of the nouns *car* and *typist* are as shown below (cf. Pustejovsky, 1995, 113, 128):

(2.55)
$$\begin{bmatrix} \textbf{car} \\ \text{ARGSTR} = \left[\text{ARG1} = x : \textbf{vehicle}\right] \\ \text{QUALIA} = \begin{bmatrix} \text{FORMAL} = x \\ \text{TELIC} = \textbf{drive}(e, y, x) \\ \text{AGENTIVE} = \textbf{create}(e, z, x) \end{bmatrix} \end{bmatrix}$$

(2.56)
$$\begin{bmatrix} \textbf{typist} \\ \text{ARGSTR} = \left[\text{ARG1} = x : \textbf{human}\right] \\ \text{QUALIA} = \begin{bmatrix} \text{FORMAL} = x \\ \text{TELIC} = \textbf{type}(e, x) \end{bmatrix} \end{bmatrix}$$

[32] Larson does not discuss the contextual variability of the interpretations of phrases like *fast horse* (nor the analogous interpretative variability of *deverbal* nominals modified by manner adjectives, when the modified events are different from those denoted by the base verbs). He merely points out "vagueness in the link" between the meaning of a noun like *horse* and a verb like *run*.

The presence of event predicates in the TELIC and AGENTIVE qualia of individual-denoting nouns enables manner adjectives to combine with them semantically, being predicated of the event arguments of these predicates. This is done by means of *selective binding*, a semantic mechanism in the Generative Lexicon that allows adjectives to apply only to a specific quale of the noun rather than to the noun as a whole. Hence, the fact that the TELIC quale of *typist* contains the event predicate **type** captures the most salient and common interpretation of the phrase *fast typist*, i.e., 'typist who is fast at typing' (cf. Pustejovsky, 1995, § 7.3).

However, what is problematic for this approach, which encodes a lot of conceptual knowledge about real-world scenarios and their *typical* ingredients in the lexical entries of words, is to account for less typical or not typical contextually determined interpretations (cf. Bosch, 2009, for a recent critical discussion of the Generative Lexicon along similar lines). Specifically in our case of individual-denoting nouns modified by manner adjectives, this means that their interpretations are restricted to the ones based on the event predicates specified in the TELIC or AGENTIVE qualia of the modified nouns. Thus, e.g., 'typist who is fast at typing' is the *only* possible interpretation of *fast typist* in the Generative Lexicon, because the TELIC quale of *typist* is fixed to the event predicate **type**. Similarly, picking up again the familiar example from Beesley (1982) discussed in section 2.1.3.2, *good lutist* can be interpreted *only* as 'lutist who is good at playing the lute'; any other context-specific interpretations of this phrase, such as 'lutist who is good at playing chess' discussed by Beesley, cannot be modeled. Furthermore, it is unclear how the Generative Lexicon can account even for one of the interpretations of the phrase *fast horse*, let alone for the range of its interpretations discussed above, as it is unclear what the purpose or function of horses (and of natural kinds in general) is, which is supposed to be represented as an event predicate in the TELIC quale of *horse*, thus making it possible for it to combine semantically with *fast* as a property of events.[33]

In view of these considerations and because of a generally stipulative character of an analysis of individual-denoting nouns as containing events

[33] These problems can be avoided using a framework like the *Type Composition Logic* developed in Asher (2011), in which individual-denoting nominals are not assumed to have an event argument, but the type clash between a manner adjective analyzed as a predicate of events and an individual-denoting nominal triggers the introduction of an *underspecified* eventuality $\phi_{\epsilon(\alpha,\beta)}$ into the logical form (cf. Asher, 2011, 233, 260). Yet, this powerful mechanism is basically ad hoc. By contrast, on the analysis offered in this thesis, the event is introduced by a *syntactic* constituent, viz., an *at*/*in*-gerund.

in their semantic structure, I conclude that the events which manner adjectives are predicated of when modifying individual-denoting nouns have to be looked for elsewhere than in the semantics of their *modified nouns*. In particular, following Croft's (1984) idea discussed in section 2.2.2.1, I assume that the source of the relevant events are *prepositional gerunds*, such as the ones illustrated in (2.39). The advantages of an analysis based on this assumption—which will be developed in section 4.2—are that it is able to straightforwardly account for the context-dependent variability of the interpretations of individual-denoting nominals modified by manner adjectives and that it is not forced to make unmotivated assumptions about the semantics and/or the internal structure of the modified nouns. On the other hand, an inevitable implication of an analysis along these lines is that such prepositional gerunds are *always* present in the underlying structure of NPs that contain individual nominals modified by manner adjectives, that is, *also* in cases when they are not explicitly present in the surface syntax. This, however, does not make these gerunds less grammatically real, as they can always be made explicit, or less semantically real, as they are necessary to interpret the phrase.

Summing up, this section has discussed a number of approaches that analyze manner adjectives as predicates of events, thus bridging the gap to the standard analysis of manner adverbs along the same lines. There is a number of facts, however, which suggest that the analysis of manner adverbs as predicates of events is too simplistic, and an elaboration based on manners as a basic semantic type is necessary. Specifically, this elaboration implies that the base adjectives of manner adverbs are analyzed as predicates of manners (and thus, in order to keep the analysis of manner adjectives uniform, also their occurrences with individual-denoting nouns and event nominals should be analyzed as predicates of manners). Therefore, section 2.3 will discuss arguments in favor of a manner-based analysis of manner adverbs and will also outline some existing accounts along these lines.

2.3 Manners

2.3.1 Introducing manners as a semantic type

The standard approach to manner adverb(ial)s in the framework of event semantics is to treat them as co-predicates of the event introduced by the verb. This approach has been suggested already by Reichenbach (1947),

and later also by Davidson (1967) and Parsons (1990), the loci classici of the so-called Davidsonian and neo-Davidsonian versions of event semantics. Thus, for instance, Reichenbach (1947, 307) argues that the sentence *Annette dances beautifully* translates as 'Annette dances and her dancing is beautiful', commenting on this analysis in the following way:

> The phrase 'her dancing' is regarded here as the description of the event, and not as a description of the specific property. This interpretation offers the advantage of a very simple conception of adverbs, namely, as adjectives referred to the event indicated by the sentence.

In fact, this description depicts appropriately also the semantic representation that would standardly be assigned to this sentence in present-day event semantics. In the neo-Davidsonian style—with verb arguments introduced separately through relational predicates corresponding to thematic roles—its semantic representation is as in (2.58).[34] The denotation of *beautifully* is given in (2.57).

(2.57) $[\![\text{beautifully}]\!] = \lambda P \lambda e\ [P(e) \wedge \mathbf{beautiful}(e)]$

(2.58) Annette danced beautifully.
$\exists e\ [\mathbf{dance}(e) \wedge \mathbf{agent}(\mathbf{annette})(e) \wedge \mathbf{beautiful}(e) \wedge \mathbf{past}(e)]$

The fact that the semantics of a manner adverb is represented on this analysis in terms of the predicate corresponding to its adjective counterpart will be discussed in more detail in section 2.3.2 below. What I will focus on now is the intuition that what is actually beautiful in (2.58) is not the *event* of Annette's dancing, but rather the *manner* in which she danced. Obviously, this intuition is not reflected in the analysis in (2.58), in which **beautiful** is treated as a predicate of events.

The intuition that the analysis of manner adverbs in terms of properties of events makes them (or, rather, the corresponding manner adjectives) be predicated of a wrong sort of thing has been expressed already by Reichenbach himself, meant as a critical consideration with respect to his own conception of manner adverbs as "adjectives referred to the event indicated by the sentence" (Reichenbach, 1947, 307–308). Later on, this intuition served as the starting point for a number of scholars to argue

[34] The sentence in (2.58) is the past tense version of Reichenbach's original sentence, which allows to stick to existential event quantification for simplicity. Tense is represented at this point simply in terms of the predicate **past** as a separate conjunct.

that a separate semantic type of manners should be introduced into the ontology of basic semantic types and that the base adjectives of manner adverbs should be reanalyzed in terms of manner predicates. Proponents of this position include Dik (1975), Piñón (2007), M. Schäfer (2008), and, less explicitly, also Bartsch (1970) and McConnell-Ginet (1982). In what follows, I will, first, summarize the arguments in favor of a manner-based analysis of manner adverbs that have been presented in Piñón (2007) and then provide some further arguments to the same effect.

First, Piñón reiterates the observation that a sentence with a manner adverb can be paraphrased by predicating the corresponding adjective of a DP containing the noun *way* or *manner* as the head of a relative clause with the main verb from the original sentence. The examples below from Piñón (2007) illustrate this paraphrase:

(2.59) a. Rebecca wrote illegibly.
∼ The way Rebecca wrote was illegible.
b. Malika spoke softly.
∼ The way Malika spoke was soft. (Piñón, 2007)

These examples make explicit the intuition discussed above, namely, that it is the manner in which some event unfolds that is attributed the property denoted by the base adjective of a manner adverb, rather than the event itself. In this sense, manner adjectives may be regarded to be suited primarily for manner-denoting nouns and not for event nominals, as suggested by Vendler (1968, 90), see the discussion in connection with (2.32) and (2.33) from section 2.2.1. The problem that the possibility of paraphrases as in (2.59) presents for standard event semantics is that it has no choice but to analyze DPs like *the way Rebecca wrote* as denoting events, contrary to intuition and common sense.

Relatedly, *–ly* manner adverbs can be transformed into prepositional adverbials of the form *in a(n) A manner/way*, where *A* is the base adjective of the manner adverb, as demonstrated by the examples below from Dik (1975) for the adverbs *wisely*, *beautifully*, and *illegibly* (see also (1.3) in section 1.1):

(2.60) a. John answered the question *in a wise manner/way.*
b. Mary dances *in a beautiful manner/way.*
c. John writes *in an illegible manner/way.* (Dik, 1975)

The problem in connection with the transformations above is essentially the same as in the case of the paraphrases in (2.59): Standard event

semantics has no means to give an adequate analysis to the nouns *manner* and *way* modified by manner adjectives inside manner adverbials of the type *in a(n) A manner/way* and, more generally, it does not say anything about the internal structure of such manner adverbials and their compositional semantics.[35] By contrast, a theory that considers manners a separate semantic type does not face this problem being able to analyze *manner* and *way* as manner-denoting nouns.

Second, Piñón (2007) points out that there is a difference in interpretation between sentences that contain verbs of perception with bare infinitival complements and sentences that contain verbs of perception with *how*-clauses as their complements. While the former ones report perceptions of events, the latter ones by contrast report perceptions of manners in which events unfold. Piñón's examples that illustrate this interpretative difference are given below.

(2.61) a. Malika saw Rebecca write illegibly.
b. Malika saw how Rebecca wrote.

(2.62) a. Rebecca heard Malika speak softly.
b. Rebecca heard how Malika spoke. (Piñón, 2007)

Standard (neo-)Davidsonian event semantics offers a straightforward analysis for verbs of perception with bare infinitival complements, which in fact have been used as an argument for events as a basic semantic type (cf., e.g., Parsons, 1990, 15–17; but see F. Landman, 2000, § 1.6). Thus, for example, the sentence in (2.61a) above would be given the semantics along the lines of (2.63), whereby the theme argument of *see* is identified with the event argument of *write*:

(2.63) $\exists e\ [\mathbf{see}(e) \wedge \mathbf{past}(e) \wedge \mathbf{experiencer}(\mathbf{mal})(e) \wedge \exists e'\ [\mathbf{write}(e') \wedge \mathbf{agent}(\mathbf{reb})(e') \wedge \mathbf{illegible}(e') \wedge \mathbf{theme}(e')(e)]]$

But it is not clear how to analyze in standard event semantics sentences containing verbs of perception with complements in the form of *how*-clauses, if not in the same way as sentences containing verbs of perception with bare infinitival complements, like illustrated above. In other words, the difference in interpretation between these two types of sentences cannot be captured by the means available to this sort of semantic theory.

[35] Similarly, standard event semantics does not offer an account of the internal structure of manner adverbs and, in particular, of the role of the adverbial suffix *–ly*, more on which below.

This difference can be captured, however, in a theory that assumes manners to be a basic semantic type, as it would be able to analyze a sentence like (2.61b) in a different way from the one depicted in (2.63), namely, by assuming that the theme argument of *see* is identified with the manner variable introduced by the *wh*-word *how*. Thus, the argument for manners from *how*-clauses embedded under verbs of perception is in fact parallel to Parsons' (1990) argument for events from bare infinitivals embedded under verbs of perception.[36]

In addition to these arguments for manners made by Piñón (2007)[37], there are also further facts that speak in favor of manners as a separate semantic type. One of them concerns the existence of nominal(ization)s denoting properties of manners; another concerns the possibility of anaphoric reference to manners. Note that in both cases the argumentation for underlying manners mirrors that for underlying events (cf. Davidson, 1967; Parsons, 1990).

In a similar way as there are nouns that denote properties of events (most of which are nominalizations formed by means of such suffixes as *–ing*, *–ation*, *–ment*, *–al*, etc., see section 4.1), there also exist manner-denoting nouns. Some of them are deadjectival nominalizations that are derived from manner adjectives, often by means of the suffix *–ness*, e.g., *skillfulness*, *carelessness*, *sloppiness*; others, on the contrary, are the base nouns of manner adjectives, e.g., *care*, *grace*, *courage*, etc. The meanings of such nominals are similar to the meanings of periphrastic NPs of the form *A manner/way*, where *A* is the corresponding manner adjective (cf. *skillfulness* and *skillful way*), and, like in the case of the latter, intuitively they denote manners, rather than events or anything else in the semantic ontology of standard event semantics. The manner interpretations of such

[36] See section 4.1.3.2 for some further discussion regarding the interpretation of sentences that contain verbs of perception with *how*-clauses as their complements as well as an analysis of their semantics.

[37] Piñón also puts forth a third argument, which comes from the fact that standard event semantics is not able to account for scope-taking manner adverbs as in the examples below (cf. Parsons, 1970), because it treats stacked manner adverbs as conjoined predicates of the same event:

(i) a. Rebecca painstakingly wrote illegibly.
b. Malika carefully spoke softly. (Piñón, 2007)

These data have not been included into the discussion of the arguments for manners, because the version of the manner-based analysis of manner adverbs advocated in this thesis, unlike Piñón's version, is not able to account for scope-taking manner adverbs either.

nouns are particularly obvious when the events whose manners they specify are stated overtly, as, for instance, in the following example:[38]

(2.64) John's carelessness in driving bothers Mary.

Note also that such manner-denoting nouns can occur inside manner *with*-PPs, which are semantically similar to *–ly* manner adverbs and adverbials of the form *in a(n) A manner/way* (e.g., *dance with beauty and grace*, *drive with care/carelessness*, *fight with courage*, etc.), and can also be further modified by manner adjectives (as in *careless courage*, *skillful care*, etc.).

Anaphoric reference to manners is possible as well. On the one hand, a particular manner can be referred to by the pronoun *it*, as in the example below, on the salient interpretation of which *it* refers to the fast and reckless way of John's driving, rather than to the event of John's driving or the corresponding fact:

(2.65) On the highway John usually drives fast and recklessly. It scares Mary.

On the other hand, manners also allow for anaphoric reference by the demonstrative adverbs *so* and *thus*, as well as their more commonly used analytic equivalents *in this way* and *like this*. These expressions refer to manners specified (described or demonstrated) in the discourse context, as in the following example:[39]

(2.66) Mary spoke slowly and carefully. Her voice sounded very scary this way.

[38] Note that *ing*-OF nominals as in (i) from Vendler (1967, 140) have been claimed to be ambiguous between an event reading and a fact reading, and this ambiguity has been taken as evidence for events (cf., e.g., G. Katz, 2000, 397–400).

(i) John's singing of the Marseillaise surprised me.

Yet, in fact, the ambiguity of the sentence above is between a manner reading and a fact reading, as acknowledged by Vendler himself: "It may be that it was something about his singing that surprised me; his pleasant voice perhaps" (Vendler, 1967, 140). This is supported by the fact that an appropriate paraphrase of one of its readings involves a manner-denoting nominal, e.g., 'the way John sang the Marseillaise surprised me', while the other reading can be paraphrased as 'the fact that John sang the Marseillaise surprised me'. In this sense, the ambiguity of such sentences as the one above provides evidence for manners, rather than events.

[39] But see M. Landman & Morzycki (2003), who also assume that such expressions are anaphoric to manners, but model manners in terms of event kinds.

In view of these considerations, I will follow Dik (1975), Piñón (2007), and M. Schäfer (2008) in assuming manners to be a separate basic semantic type, along with individuals, events, degrees, times, worlds, and so on, as well as in assuming that the semantic structure of sentences with manner adverb(ial)s contains predication over manners. The next section will introduce existing manner-based analyses of manner adverbs and discuss in which respects they require further elaboration.

2.3.2 Manner-based analyses

In the previous section, we discussed a number of arguments that manner modification implies predication over manners. In accordance with that, manner adverbs are assumed to contribute manner predicates. The next question is how manners are linked to events.

A natural way to relate manners to events is by means of a "manner function", i.e., a partial function from events to manners. In this case, the semantic representation of Reichenbach's sentence in (2.58) would look as in (2.67), which reproduces (with minor modifications) the formalization suggested in M. Schäfer (2008, 364).[40]

(2.67) Annette danced beautifully.
$\exists e\ [\mathbf{dance}(e) \wedge \mathbf{agent}(\mathbf{annette})(e) \wedge \mathbf{past}(e)$
$\wedge\ \exists m\ [\mathbf{manner}(m)(e) \wedge \mathbf{beautiful}(m)]]$

In other words, the manner function, which is represented in (2.67) as **manner**, relates manners to events in an analogous way to how individuals are linked to events by means of thematic role functions in neo-Davidsonian event semantics.

The idea of such a manner function is not new. It has been discussed already in Fodor (1970, 312–314), being part of his critique of Davidson (1967). Fodor discusses several possible semantic representations for the sentence *John spoke clearly*, two of which are given in (2.68), where x is a variable ranging over events and y is a variable over manners. The role of 'is a manner of' and of the anonymous function R in (2.68) is clearly the same as the role of **manner** in (2.67), namely, to relate manners to events. In general, although Fodor rejects this type of approach, mainly because "it abandons all hope of ontological parsimony, since we are now

[40] These modifications include the addition of the conjunct **past**, since the sentence in (2.67) is the past tense version of Reichenbach's original sentence, as already mentioned above, and the representation of the thematic role as **agent** and not **subject**.

committed to quantifying, not just over events, but also over manners" (Fodor, 1970, 313), he offers probably the first explicit discussion of the possibility to model manners as a separate semantic type.

(2.68) John spoke clearly.

a. $(\exists x, y)$ (spoke (John, x)) & (y is a manner of speaking) & (y is John's) & (y is clear)

b. $(\exists x, y)$ (spoke (John, x)) & ($R(y, x)$) & (y is clear)

The manner function is employed also in the analyses by Dik (1975) and Piñón (2007), although in a slightly different way. In particular, Dik (1975) assumes that "[a]ll +Control and all +Change Situations (i.e., all Activities, Positions, and Processes[41]) have an implicit manner in which they are carried out or go on", cf. his redundancy rule in (2.69), where s is a variable over events (situations), m is a variable over manners, while M_s stands for 'the manner of s' (Dik, 1975, 117–118). Accordingly, Dik's semantic representation of Reichenbach's sentence *Annette dances beautifully* looks as in (2.70), where 'beautiful' is predicated of the manner m which is the value of the manner function M when applied to the dancing event S_1.[42]

(2.69) (s) $(\mathrm{Co}(s) \vee \mathrm{Ch}(s) \rightarrow (\exists m)$ $(m = \mathrm{M}_s))$

(2.70) Annette dances beautifully.
$\mathrm{S}_1(\mathrm{dance}(\mathrm{Annette}))_{\mathrm{S}_1}$ & $\mathrm{beautiful}(\mathrm{M}_{\mathrm{S}_1})$

Piñón's (2007) approach is similar, which can be shown on his analysis of *write illegibly*. He assumes that events of writing (by hand) have a form-manner which is yielded by the manner function **form**, cf. (2.71).[43] He furthermore assumes that this manner function is "hardwired" in the semantics of manner adverbs that specify a manner of writing, including *illegibly*, whose denotation is given in (2.72a). Accordingly, *write illegibly* receives the semantics in (2.72b) below, whereby **illegible** applies to the manner that is the value of the function **form** when applied to the event of writing.

[41] Dik's Activities and Processes correspond to Vendler's (1957) activities, while his Positions correspond to Dowty's (1979) "interval states".

[42] See Piñón (2008) for a neo-Davidsonian representation of the semantics in (2.70).

[43] Note that Piñón (2007, 2008) employs several distinct manner functions, namely, **form** (for adverbs such as *illegibly*), **effort** (for adverbs such as *painstakingly*), **speed** (for adverbs such as *quickly*), which are more specific than **manner**. I will not make this more fine-grained distinction in this thesis.

(2.71) $\forall E \forall e\ (E = [\lambda e'.\mathbf{write}(e') \wedge \mathbf{by\text{-}hand}(e')] \wedge E(e)$
$\rightarrow \exists m\ (\mathbf{form}(E)(e) = m))$

(2.72) a. $[\![\text{illegibly}]\!] = \lambda E \lambda e.E(e) \wedge \mathbf{illegible}(\mathbf{form}(E)(e))$
b. $[\![\text{write illegibly}]\!] =$
$\lambda e.\mathbf{write}(e) \wedge \mathbf{illegible}(\mathbf{form}(\lambda e'.\mathbf{write}(e'))(e))$

The approach according to which manners are linked to events via a manner function as in (2.67) will be adopted also in this thesis.[44] Hence, as a next step, it needs to be clarified which constituent contributes this manner function—as well as the quantifier over manners—to the logical form of sentences that contain manner adverbs. One possibility is to assume with Piñón (2007) that they are introduced as part of the semantics of *–ly* manner adverbs along with the actual manner predicates, without entertaining a more fine-grained morphosyntactic analysis of *–ly* manner adverbs. Yet, in this case, the presence of an additional relational predicate and a quantifier in the semantic structure of manner adverbs remains unmotivated. Alternatively, it may be assumed that, while the predicates over manners are contributed by the base adjectives of manner adverbs, the manner function and manner quantifier are supplied by some other constituent in the internal structure of *–ly* manner adverbs. Below I will outline the relevant aspect of the analysis developed in M. Schäfer (2008), which seems to allude to this possibility.

The type of semantic representation that Schäfer assigns to sentences containing manner adverbs has already been exemplified in (2.67) above. Let us see now how Schäfer arrives at the semantic structure along these lines using the example in (2.73), whose compositional semantics he spells out in a more detailed way (note that tense is ignored).

[44] Another way of relating manners to events is to assume that verbs have a manner argument in addition to their event argument. An analysis along these lines would be an elaboration of the account proposed in McConnell-Ginet (1982), who suggests that manner adverbs augment the argument structure of verbs adding a manner argument and are predicates over the corresponding 'WH-manner' variable, or 'WH-rate' variable in the case of such adverbs as *quickly* or *slowly*,—without assuming verbs to have an event argument. Below is the semantics that *stab quickly* would receive on this analysis, as given by F. Landman (2000, 84):

(i) $[\![\text{stab quickly}]\!] = \lambda y \lambda x.\exists r\ [\mathbf{rate}(r) \wedge \mathbf{quick}(r) \wedge \mathbf{stab}(x, y, r)]$

Manners (rates) become related to events on the analysis along these lines as soon as verbs are assumed to have an event argument. However, in this thesis, I will stick to the analysis in terms of the manner function, instead of assuming verbs to have an additional manner argument (see F. Landman, 2000, 84–85, for some discussion).

(2.73) John wrote illegibly.
$\exists e\ [\mathbf{write}(e) \wedge \mathbf{agent}(\mathbf{john})(e) \wedge \mathbf{past}(e)$
$\wedge\ \exists m\ [\mathbf{manner}(m)(e) \wedge \mathbf{illegible}(m)]]$

First, Schäfer assumes the following denotation for the base adjective of the adverb *illegibly*:

(2.74) $[\![\text{illegible}]\!] = \lambda m.\mathbf{illegible}(m)$

Next, he postulates a *template for manner adverbials* which is needed "to introduce the manner variable and to turn the predicate of type $\langle e,t\rangle$ into a modifier of type $\langle\langle e,t\rangle,\langle e,t\rangle\rangle$" (M. Schäfer, 2008, 365):[45]

(2.75) *Template for manner adverbials*:
$\lambda Q\lambda P\lambda e\ [P(e) \wedge \exists m\ [\mathbf{manner}(m)(e) \wedge Q(m)]]$

The result of the application of this template to the denotation of the base adjective *illegible* yields the semantics below, which corresponds to the semantic contribution of the manner adverb *illegibly*:

(2.76) $\lambda P\lambda e\ [P(e) \wedge \exists m\ [\mathbf{manner}(m)(e) \wedge \mathbf{illegible}(m)]]$

Supplying the property of events of writing by John to the structure above and existentially quantifying over events, Schäfer thus obtains the desired semantic representation in (2.73).

[45] Schäfer speaks of the types $\langle e,t\rangle$ and $\langle\langle e,t\rangle,\langle e,t\rangle\rangle$ because the denotations of the base adjective *illegible*, of the template for manner adverbials, as well as of the result of the application of the latter to the former actually look in his paper as in (i) below, rather than as in (2.74)–(2.76):

(i) a. $[\![\text{illegible}]\!] = \lambda x.\mathbf{illegible}(x)$
b. $\lambda Q\lambda P\lambda x\ [P(x) \wedge \exists m\ [\mathbf{manner}(m,x) \wedge Q(m)]]$
c. $\lambda P\lambda x\ [P(x) \wedge \exists m\ [\mathbf{manner}(m,x) \wedge \mathbf{illegible}(m)]]$

Whereas in (ia) *illegible* denotes a property of individuals, type $\langle e,t\rangle$, in (ic) it acts as a property of manners, type $\langle m,t\rangle$, as actually proclaimed in this type of analysis. Similarly, P in (ib) and (ic) is a variable ranging over properties of individuals, while what needs to be supplied in order to get the semantics of the entire sentence in (2.73) is a property of events, type $\langle v,t\rangle$. It seems that, in order to have a semantically well-formed composition based on the denotations in (ia)–(ic), some sort of underspecification formalism needs to be assumed according to which the semantic type of individuals e is a super-type which includes both manners and events as its sub-types. To avoid this complication concerning semantic types not relevant for the present discussion, Schäfer's denotations in (ia)–(ic) are modified as in (2.74)–(2.76), where *illegible* denotes a property of manners and P ranges over properties of events. Accordingly, the semantic type of the adverb *illegibly* in (2.76) is $\langle\langle v,t\rangle,\langle v,t\rangle\rangle$ and not $\langle\langle e,t\rangle,\langle e,t\rangle\rangle$.

Schäfer's analysis of manner adverbs differs with respect to an important aspect both from the (neo-)Davidsonian analysis and from the other manner-based analyses, such as the one proposed by Piñón (2007). Recall that in (neo-)Davidsonian event semantics it is standardly assumed that "the adverb and related adjective contribute exactly the same predicate to logical form" (see Parsons, 1990, 18), namely, the event predicate corresponding to the adjective, as in the semantic representation in (2.58). This implies that the adverbial suffix *–ly* is not attributed any semantic significance, and its presence is simply ignored. Similarly, Piñón's (2007) semantics of manner adverbs illustrated in (2.72) is modeled in terms of the predicates corresponding to their adjectival counterparts. The difference of his analysis from the (neo-)Davidsonian one is that the semantic structure of manner adverbs is more complex in it, as it involves predication over manners, but—like in standard event semantics—the semantic contribution of a manner adverb is reduced to the semantic contribution of its base adjective and the role of *–ly* is neglected. In this respect, the analysis proposed by Schäfer importantly differs from the aforementioned analyses, as it attempts to establish a more compositionally transparent semantic relation between manner adverbs and their base adjectives. In particular, he *derives* the semantics of the former from the semantics of the latter, as shown in (2.74)–(2.76) for *illegible*/*illegibly*. In other words, on his analysis, manner adverbs and adjectives are not simplistically regarded as having the same semantics, i.e., as two different morphological realizations of the same semantic content, like it is the case in the other approaches.

In spite of this asset of Schäfer's analysis, the *specific* way in which he derives the semantics of manner adverbs from the semantics of the corresponding adjectives appears to be problematic or, at least, dissatisfactory. In particular, Schäfer assumes that it is the role of the template for manner adverbials in (2.75) to semantically make manner adverbs out of their adjective counterparts. However, he does not specify which syntactic constituent introduces the semantics of this template and whether its semantics corresponds to any syntactic constituent at all. If it does not, this means that the postulation of the template for manner adverbials is stipulative and that the semantic derivation of manner adverbs by means of it is, in the end, not as compositionally transparent and syntactically adequate as desired.

Alternatively, Schäfer's template for manner adverbials may be seen as representing the semantic contribution of the adverbial suffix *–ly*, even though Schäfer does not state it explicitly. This interpretation of the tem-

plate for manner adverbials makes sense insofar as this template seems to do the same thing in the semantics as the suffix *–ly* in the morphosyntax, namely, it makes manner adverbs out of the corresponding manner adjectives. Thus, both the manner function and the quantifier over manners would be contributed by the semantics of the suffix *–ly* in this case. The question is, though, if there are any reasons to assign the semantics along the lines of (2.75) to the suffix *–ly*. It seems that, in fact, there are arguments against this possibility, as will become clear from the subsequent discussion.

First of all, it is unclear what motivation there might be to load the semantics of the suffix *–ly* with a θ-role-like function and a quantifier. In other words, if *–ly* is a category-changing suffix, as commonly assumed, it remains to be explained why the category change from (manner) adjective to adverb should actually be associated with the introduction of the semantics in (2.75) into the logical form, like in the analysis by Schäfer. As long as this explanation is missing, the claim that it is the semantics of *–ly* that contributes the manner function and manner quantifier is no less stipulative than the claim that they are contained in the denotations of the base manner adjectives themselves, as discussed earlier.[46]

Furthermore, adverb formation by means of *–ly*-suffixation is not restricted to manner adverbs only: *–ly* operates across semantic classes of adverbs being able to form most of them, if not all.[47] In view of this fact, Schäfer's template for manner adverbials cannot be seen as representing the semantics of *–ly* in general, but only the semantics of its occurrences specifically in *manner* adverbs. Hence, the occurrences of *–ly* in adverbs of other semantic classes require different semantics, and this implies the necessity to postulate numerous distinct lexical entries of this suffix, thus making it highly ambiguous. An alternative approach that is intuitively more adequate than to assign *–ly* a very specific semantics for each adver-

[46] In fact, the latter option may be even seen as more preferable in this context, as it would have the advantage of also being able to account for how manners are related to events in cases when manner adjectives modify event nouns, which intuitively call for a parallel analysis. By contrast, it is not obvious how manners are linked to events in such cases if the manner function is assumed to be introduced by *–ly*, since *–ly* is absent in manner adjectives. It should also be pointed out in this connection, though, that the analysis of manner adverbs proposed in this thesis does not straightforwardly account for how the linking of manners to events works in adjectival manner modification of event nominals either, even though it does not imply that the manner function comes from the semantics of *–ly* (see section 4.1).

[47] See (3.42) in section 3.1.2.2 for some examples of *–ly* adverbs belonging to various semantic classes.

bial class, like (2.75) for manner adverbs, is to leave its semantics empty or near-empty. In this case, we are, however, back to the question which syntactic constituent introduces the manner function and the quantifier over manners into the logical form.

As both of the considerations discussed above allude, to answer this question, we need first to understand what adverbs are as a category as compared to adjectives and what the function of *–ly* really is. Therefore, section 3.1 will be devoted to an analysis of the morphosyntactic structure of *–ly* adverbs. As a result, I will reconsider the view that *–ly* adverbs are a separate lexical category and that *–ly* is a category-changing derivational suffix, arguing instead that they are PPs whose null head takes as a complement the dummy noun *–ly* attributively modified by the base adjective. Specifically in the case of manner *–ly* adverbs, this means that they are structurally akin to prepositional manner adverbials of the type *in a(n) A manner/way*. Based on this, I will show in section 3.2 that the manner-based semantics of *–ly* manner adverbs argued for in this section maps in a compositionally straightforward way on this internal structure of them. In particular, the property of manners is introduced by the base adjective, the manner function is contributed by the P head, whereas the existential quantifier over manners comes from the indefinite determiner. Thus, the syntax–semantics mapping in *–ly* manner adverbs will in fact be argued to be analogous to that in prepositional manner adverbials of the type *in a(n) A manner/way*.

Summing up, in view of the arguments outlined in section 2.3.1 above, I consider the analysis of manner adjectives as properties of manners to be more adequate than their usual analysis as properties of events. It will therefore be followed in this thesis, which presupposes that manners constitute a separate semantic type. Furthermore, the semantic structure of manner adverbs will be taken to be more complex than just the denotations of their base adjectives (i.e., properties of manners) and to also contain the manner function and the manner quantifier, such that manner adverbs as a whole denote properties of events. However, differently than in other existing manner-based analyses, this semantic structure of manner adverbs will be derived compositionally in this thesis, along the internal structure proposed for them, as described above. Finally, since manner adjectives will be treated as properties of manners, semantically they will be able to combine only with manner nominals in a straightforward way. Thus, sections 4.1 and 4.2 will be concerned with the compositional semantics of adjectival manner modification of event and individual nominals, respectively.

2.4 Summary

This chapter has provided an overview of approaches to the semantics of manner adjectives and manner adverbs. It has first presented M. Siegel's (1976) theory of manner adjectives as intensional predicate modifiers and shown its inadequacies and shortcomings. Next, it has discussed a family of analyses which assume that, rather than being modifiers of intensions, manner adjectives are modifiers of implicit events that are present in the semantics (Croft, 1984; Larson, 1998; Egg, 2008; Winter & Zwarts, 2012; Pustejovsky, 1995; Asher, 2011). The strength of these eventive accounts is that they provide a unification in the analysis of manner adjectives and manner adverbs, since the latter are also standardly treated as predicates of events. However, what is problematic for these accounts is the issue of the source of the implicit event: While most of them hold that the event is provided by the semantics of the modified nouns of manner adjectives, this chapter has shown that this view is difficult to sustain under standard semantic and syntactic assumptions. Furthermore, it has been argued that in fact an analysis of manner adjectives in terms of event predicates falls short of accounting for a number of data and that manner adjectives should be analyzed as predicates of manners of events—and not of events themselves. Accordingly, manner adverbs have been argued to have complex semantics which incorporates a predicate of manners along with the manner function and manner quantifier. Thus, the denotations of manner adjectives and adverbs will be assumed in this thesis to be as represented below (ignoring gradability).

(2.77) $[\![\text{A}]\!] = \lambda m.\mathbf{A}(m)$ $\langle m, t\rangle$

(2.78) $[\![\text{A-ly}]\!] = \lambda e.\exists m\ [\mathbf{manner}(m)(e) \wedge \mathbf{A}(m)]$ $\langle v, t\rangle$

And, finally, it has been observed throughout this chapter that manner adjectives have the following properties in the context of individual-denoting nouns:

- can give rise to substitution failure
- can modify "semantically bare" nouns and be used predicatively
- can be interpreted not relative to the meaning of the head noun
- can take *at*/*in*-gerunds
- cannot be conjoined with intersective adjectives

These properties will be accounted for by the theory of manner modification developed in the chapters to follow.

CHAPTER 3

Decomposing manner adverbs

On the basis of the assumption that manners constitute a separate basic semantic type, it has been argued in chapter 2 that manner adverbs have a complex semantic structure which incorporates (i) a predicate of manners, (ii) the manner function, and (iii) a quantifier over manners. In this chapter, we will see that in fact this semantics of manner adverbs can be derived in a compositional way.

Section 3.1 will be devoted to a discussion of the internal structure of deadjectival adverbs formed by means of *–ly*. It will first present evidence that *–ly* is not a derivational or inflectional suffix, as is usually assumed, but rather a root, more specifically, a nominal root. On the basis of this evidence, it will then be argued that, rather than constituting a separate lexical category, *–ly* adverbs are compound PPs headed by a null preposition whose complement is a DP containing the noun morpheme *–ly* and the base adjective as its attributive modifier.

Subsequently, section 3.2 will show that given this morphosyntax, the desired semantics of manner adverbs becomes fully compositional insofar as the manner predicate is contributed by the base adjective, the manner function by the P head, and the manner quantifier by the D head.

Finally, section 3.3 will discuss the syntax of manner adverbs. It will be argued that they are generated as right adjuncts to VP, but can raise to [Spec,AspP] for weight or information-structural reasons, which yields their post-verbal and pre-verbal placement, respectively.

3.1 Adverbs as a category

3.1.1 Inflectional and derivational analyses

The question of whether adverbs in English constitute a lexical category does not have a well-established answer. The main reason for this is the fact that the predominant majority of English adverbs are derived from adjectives and share with them a significant number of properties; moreover, adjectives and adverbs in general are in systematic *complementary* distribution. These facts make it tempting not to distinguish a separate lexical category of adverbs in English, assuming that deadjectival adverbs are adjectives "in disguise", or, more precisely, that such adverbs and adjectives are syntactically conditioned variants of a *single* major category (cf., e.g., Emonds, 1976, 1985; Sugioka & Lehr, 1983; Bybee, 1985), and that the remaining not numerous non-deadjectival adverbs can be reanalyzed as belonging to other categories.[1] This view, thus, implies that the adverbial suffix *–ly* is an *inflectional* suffix, as explicitly argued, e.g., by Sugioka & Lehr (1983) and Bybee (1985). Nevertheless, as attractive as the single category hypothesis is, it is not a predominant view; rather, it is quite standard to assume that adverbs form a separate lexical category distinct from that of adjectives and that the suffix *–ly* is, accordingly, a category-changing *derivational* suffix which makes adverbs out of adjectives (cf., e.g., Zwicky, 1995; Payne et al., 2010, for an explicit and systematic advocation of this position). In what follows, I will outline some of the arguments in favor of both positions.

The fundamental difference between adjectives and adverbs concerns the range of categories they can modify and the ability to occur predicatively, and in both respects they are in complementary distribution. Adjectives can modify nouns (of different semantic types) and may be used in the predicative position; adverbs, by contrast, are non-noun modifiers, being able to modify verbs, adjectives, and other adverbs, as well as prepositional adverbials, and cannot occur predicatively.

(3.1) a. a {painful/*painfully} wound *nouns*
b. injure {*painful/painfully} *non-nouns*
{*painful/painfully} honest
{*painful/painfully} slowly
{*painful/painfully} behind the times

[1] For example, *quite*, *very*, *too* are now standardly treated as Deg heads; *downstairs*, *outside*, *backstage* may be analyzed as PPs (cf. Payne et al., 2010, 40), and so on.

(3.2) This wound is {painful/*painfully}.

The complementary distribution of adverbs and adjectives has served as an argument in favor of their belonging to the same single lexical category, for elements in systematic complementary distribution are typically analyzed as sub-classes of the same distributional class (cf., e.g., Radford, 1988, 139–141).

The single category theory has been argued to receive further support from a number of other facts. One of them is that adjectives and adverbs permit the same range of degree modifiers, including those that form *analytic* comparatives and superlatives (see Emonds, 1976, 12–13; Emonds, 1985, 162):[2]

(3.3) a. *very* {painful/painfully}
b. *so* {painful/painfully}
c. *too* {painful/painfully}
d. *quite* {painful/painfully}
e. *rather* {painful/painfully}

(3.4) a. *more* {painful/painfully}
b. *most* {painful/painfully}

Furthermore, deadjectival *–ly* adverbs do not form *synthetic* comparatives and superlatives even in cases in which it should be morphophonologically and semantically possible. This fact has also been interpreted in favor of the single category theory, as it is unexpected if *–ly* is analyzed as a derivational affix.[3] By contrast, if it is an inflectional affix, it can be argued that *–er*/*–est* and *–ly* are mutually exclusive since they are both inflectional, while English allows only one inflectional suffix per word (cf. Hockett, 1958, 210).[4]

[2]It should be pointed out in this connection that adverbs derived from adjectives (which subcategorize for complements) were argued by Jackendoff (1977) to crucially differ from them in not being able to take complements. This generalization is, however, not correct, as will be discussed at length in section 3.1.2.1.

[3]More precisely, if *–ly* is a derivational suffix, it is unclear why degree morphology cannot attach to it (**quicklier*); the impossibility for *–ly* to attach to degree morphology (**quickerly*) is predictable, since derivation generally precedes inflection in English (cf., e.g., Stump's (2005) criterion (E)/(E′)).

[4]Interestingly, *–ly* adverbs actually *can* form synthetic comparatives/superlatives, namely, by *–ly*-deletion and *–er*/*–est*-affixation, such that the outcome of this process is identical to adjectival comparatives/superlatives (cf. Sugioka & Lehr, 1983; Zwicky, 1989, 1995). This non-trivial fact, which received little attention in the literature, will be discussed in more detail in section 3.1.2.1.

(3.5) a. *quicklier/*quickerly
*quickliest/*quickestly
b. *nicelier/*nicerly
*niceliest/*nicestly

Finally, another fact that seems to suggest the inflectional nature of *–ly* is that adverbs formed by *–ly* never participate in further derivation by suffixation (Plag & Baayen, 2009); for instance, such forms as **quicklyish*, **quicklitude*, **quickliment*, etc., cited in Payne et al. (2010, 62), do not exist. If *–ly* is an inflectional suffix, this fact receives a straightforward explanation insofar as derivational morphology generally does not apply to inflected forms.

However, despite the attractiveness of the single category theory insofar as it reduces one lexical category to another one, predominant is the view that adverbs constitute an independent lexical class. For one thing, intuitively, *–ly* does not fall under the conception of a typical inflectional affix, although the distinction between inflection and derivation is admittedly not clear-cut beyond the core cases. For another, the arguments for the single category theory have been countered by critics, most recently and systematically by Payne et al. (2010). Below, I will give a brief summary of their replies specifically to the arguments presented above.[5]

Concerning the fact that adjectives and adverbs share the set of degree modifiers, Payne et al. (2010) point out that some of these modifiers can also co-occur with members of other categories; for example, *enough*, *more*, and *less* can also modify gradable verbs, while *so*, *as*, and *too* can also modify PPs (as in *feel so out of sorts* or *be too over the moon*). This, in their view, shows that the syntactic similarity between adjectives and adverbs with respect to their degree modifiers is less strong of an argument for their belonging to a single major category than usually thought, as other categories permit some of these modifiers as well. It is not clear, however, to which extent this consideration is a counterargument, since what has been used as evidence in favor of the single category theory is the fact that adjectives and adverbs share *all* their degree modifiers and no other category permits exactly the *same* range of degree modifiers as adjectives and adverbs (cf. Emonds, 1976, 13).

Furthermore, with respect to the facts that *–ly* adverbs do not form

[5]Payne et al. (2010) also argue against a range of other facts that have been used to support the inflectional analysis of *–ly*. I do not discuss these arguments and counterarguments here for reasons of space and relevance considering them less strong or less central.

synthetic comparatives and superlatives and that they do not allow further derivation by suffixation, which are used as arguments for the inflectional nature of *–ly*, Payne et al. (2010) object that also some derivational suffixes are incompatible with degree morphology, as noticed by Zwicky (1995), e.g., *–ic*, cf. **basicer*, and that also some derivational suffixes resist further derivational suffixation, as shown by Plag & Baayen (2009), e.g., *–ism*, as in *humanism*. These are valid objections; however, they do not shed light on *why* the suffix *–ly* behaves in this way as a derivational suffix, even if there are other derivational suffixes that behave the same way, i.e., as closing morphemes. A stronger case should be made against the inflectional analysis of *–ly*, though, if the alternative is to enlarge the inventory of lexical categories.

Moreover, Payne et al. (2010) also argue against a more general claim that adjectives and adverbs are in complementary distribution. In particular, they present data that demonstrate, on the one hand, that adverbs can *post*-modify nouns, even if they cannot *pre*-modify them, and, on the other hand, that adjectives can modify other adjectives. Some of Payne et al.'s numerous examples for both phenomena are given below.[6]

(3.6) a. In view of your decision regarding Burma the British Government was not making any formal request to you for [the *use temporarily* of Australian troops to defend Ceylon].
b. Public awareness of the low birthweight problem is heightened by [the *release periodically* of major reports by a variety of public and private organizations interested in maternal and child health].
c. [The unique *role globally* of the Australian Health Promoting Schools Association], as a non-government organization specifically established to promote the concept of the health promoting school, is described.
d. During the early 1990s [a timber *shortage internationally*] led to an increase in timber prices and export opportunities for premium timber grades.

(3.7) a. blind drunk, cold sober, squeaky clean, filthy rich, dead easy, pretty fine, jolly good, bloody stupid, silky smooth
b. dark red, light red, brownish red, bright blonde, pale blonde, silvery blonde

[6]The examples in (3.6) are Payne et al.'s (16), (18d), (17a), and (19b); the phrases in (3.7) are taken from their (36), (37), and (40).

Adverbial modification of *deverbal* event nominalizations, such as *use* and *release* in (3.6a) and (3.6b), has been subject of a thorough investigation by Fu et al. (2001), who argue that the ability of such nominals to take VP-adverbs as post-modifiers testifies the presence of a VP in their morphosyntactic structure, as will be discussed in more detail in section 4.1.1. Payne et al.'s (2010) important further observation in this connection is that not only deverbal nouns may have adverbial post-modifiers, but also non-deverbal ones, like *role* and *shortage* in (3.6c) and (3.6d).[7] Since such nominals cannot be assumed to contain verbal projections in their internal structure in view of their non-deverbal origin, adverbs that modify them post-nominally, such as *globally* and *internationally* in the examples in (3.6c) and (3.6d) above, have to be analyzed as adjuncts to the NP itself.

If correct, the data in (3.6) and (3.7) make a very strong case against the single category theory, because they show that adjectives are not exclusively noun modifiers and, vice versa, that adverbs are not exclusively non-noun modifiers. The robustness of these data, especially of the data concerning adjectives modifying adjectives, does not seem to be indisputable, though.[8] Nevertheless, I will not go into the discussion of how solid these data are, as the approach to adverbs advocated in this thesis is *not* the single category theory (although it shares with it the strive to elimi-

[7]Payne et al.'s findings do not contradict Fu et al.'s claim that non-deverbal event nouns cannot take VP-adverbs, and, specifically, manner adverbs, as post-modifiers, as such cases are not attested in their corpus study (assuming that adverbs like *globally*, *locally*, *nationally*, *internationally*, etc., which often co-occur with non-deverbal nouns in their examples, are frame adverbs, rather than VP-adverbs, cf., e.g., Bonami et al., 2004, 145). See sections 4.1.1 and 4.1.3.1 for a further discussion of this issue.

[8]For example, Payne et al.'s claim about adverbial post-modification of nouns may be argued not to be based on very solid data for the following reasons. The majority of their examples involve deverbal nouns, whose adverbial post-modifiers may potentially be analyzed as modifying verbal projections inside the structure of these nouns. Furthermore, among the remaining examples with non-deverbal nouns, many contain domain/frame adverbs, whose attachment site may be disputable due to their flexible syntactic positioning (cf., e.g., Ernst, 2002). If these groups of examples are explained away, only several examples with *recently* and *lately* appear to support Payne et al.'s claim.

Concerning the examples in (3.7), it may be objected that they appear to be stable collocations belonging to restricted semantic classes (metaphoric expressive modifiers in (3.7a) and color modifiers in (3.7b)) and for this reason they may be idiosyncratic. In particular, what looks like adjectives modifying adjectives may be argued to be adverbs that idiosyncratically take the form of adjectives. Modifiers of color adjectives, as in (3.7b), may, alternatively, also be argued to be nouns, cf. the discussion in Payne et al. (2010, 54–55).

nate adverbs as a lexical category) and, importantly, it is not vulnerable to these data, as will become clear below.

The motivation for the approach to adverbs advocated in this thesis will be presented in section 3.1.2.1. In particular, it will discuss a number of facts which are difficult to explain both on the inflectional and on the derivational analysis of *–ly*, but follow automatically if *–ly* is analyzed as a *nominal* morpheme, rather than a suffix. Based on these facts, adverbs formed by means of *–ly* will be analyzed as PPs with a null P head that takes as its complement a DP containing the dummy noun *–ly* modified attributively by the base adjective, see section 3.1.2.2. Hence, specifically with respect to manner adverbs formed by means of *–ly*, this means that they are structurally identical with manner adverbials of the type *in a(n) A manner/way*.

Thus, since adjectives and adverbs will not be argued to be positional variants of a single category, their complementary distribution—whether real or not—will not play a role as an argument in what follows. However, the fact that adverbs cannot *pre*-modify nouns, which is part of the complementarity claim, finds a natural explanation within the analysis of de-adjectival adverbs as PPs, as (non-head-final) PPs cannot be pre-nominal modifiers. They may *post*-modify nouns though; therefore, Payne et al.'s (2010) data concerning post-nominal adverbs fit well into the PP analysis of *–ly* adverbs as well.[9] Moreover, this analysis also accounts for the facts that have been interpreted as evidence for the single category theory, as will be discussed in more detail in section 3.1.2.3, which gives an overview of the arguments for the PP analysis of adverbs.

3.1.2 PP analysis

3.1.2.1 Nominal nature of morpheme *–ly*

Curiously, both *–ly* in English and *–ment(e)* in Romance languages derive from nouns diachronically: *–ly* comes from Proto-Germanic **-liko-* 'body' and *–ment(e)* goes back to Latin *mente*, which is the ablative form of the feminine noun *mens* 'mind'. This fact in itself can hardly be an argument

[9]The other block of Payne et al.'s data concerning adjectives modifying adjectives, if sound, speaks strongly against the single category theory, since it shows the incorrectness of the complementarity claim, but is orthogonal to the PP analysis of adverbs, which does not presuppose the complementary distribution of adverbs and adjectives. Under the latter analysis, these data make a contribution to the understanding of the syntactic selectional restrictions of adjectives, but have no bearing for adverbs.

for the nominal nature of these adverb forming morphemes synchronically. However, there is evidence that these morphemes continue to display nominal features also in modern English and Romance languages, while the base adjectives of *–ly/–ment(e)* adverbs continue to display features of *attributive* adjectives inside adverbs. This evidence, the main points of which will be summarized below, gave rise to the view that *–ly/–ment(e)* adverbs are morphologically merged adjective–noun combinations, rather than adjective–suffix forms (see, e.g., Déchaine & Tremblay, 1996; Baker, 2003, § 4.5, for English and French adverbs; Zagona, 1990; Kovacci, 1999, for Spanish adverbs).[10]

Adjectival agreement A peculiarity of adverb formation in Romance is that *–ment(e)* must attach to the *feminine* form of the adjective, rather than to the unmarked masculine or uninflected form, as the following examples from Déchaine & Tremblay (1996) show for French:

(3.8) *French* (Déchaine & Tremblay, 1996)

a.	lente-ment	*lent-ment	'slowly'
b.	grande-ment	*grand-ment	'greatly'
c.	maladroite-ment	*maladroit-ment	'clumsily'

For Italian and Spanish, this phenomenon is illustrated by the examples below.

(3.9) a. *Italian*
silenzios-a-mente / *silenzios-o-mente
silent-FEM-mente / silent-MASC-mente
'silently'

b. *Spanish*
cuidados-a-mente / *cuidados-o-mente
careful-FEM-mente / careful-MASC-mente
'carefully'

The presence of feminine marking on the base adjectives of *–ment(e)* adverbs makes perfect sense as a manifestation of adjectival agreement if *–ment(e)* is analyzed as a morphologically merged noun modified attributively by the base adjective, because the Latin noun *mens* 'mind', which Romance *–ment(e)* comes from, is feminine, as has already been pointed out above.

[10] However, see Torner (2005) for a recent defence of the suffixal analysis of Spanish *–mente*.

By contrast, its presence is difficult to explain if *–ment(e)* is analyzed as a suffix, either an inflectional or a derivational one. In both cases, it is unclear what the function of feminine morphology in the position before *–ment(e)* could be.[11]

Additionally, if *–ment(e)* is analyzed as a derivational suffix, it would violate the principle generally valid in Romance languages that derivation precedes inflection, i.e., that derivational suffixes attach to bare uninflected stems or unmarked forms.[12]

On the inflectional analysis, *–ment(e)* and agreement morphology are in principle not mutually exclusive, since Romance languages, differently from English, allow more than one inflectional suffix per word.[13] Yet, it needs to be explained why agreement morphology is there to begin with.

Thus, the fact that agreement morphology is present on the base adjectives of Romance adverbs speaks against suffixal analyses of *–ment(e)*, but is an argument for the nominal analysis of it. Unfortunately, an analogous argument cannot be made for English *–ly*, as English does not have overt adjectival agreement morphology that would reveal its nominal nature.

Degree morphology Some Romance languages, including Italian and Spanish, have the absolute superlative, which is formed synthetically by means of the affixes *–ísim–/–issim–*. Interestingly, instead of attaching to the adverb stem, i.e., to *–mente*, these affixes attach to the (uninflected)

[11] Peter Bosch (p.c.) points out that it first needs to be shown that *–e–* and *–a–* in Romance *–ment(e)* adverbs are indeed instances of agreement morphology rather than the endings of two distinct *composition stems*. If the latter is the case, it is surprising that the distribution of *–e–* and *–a–* in Italian adverbs, which, unlike French adverbs, make use of both of these morphemes, completely coincides with their distribution as feminine markers in adjectives. It is also not clear why there are *two* different endings, which may occur in the same phonological context, as, for example, in *corr<u>ent</u>-e-<u>m</u>ente* 'currently' and *l<u>ent</u>-a-<u>m</u>ente* 'slowly', if the choice between the two composition stems is determined phonologically.

[12] Specifically for Spanish adverbs, Torner (2005) explains this deviance by arguing that *–mente* is a *phrasal* derivational affix which combines with adjective phrases containing inflected adjectives, rather than with lexical bases of adjectives. This, however, does not explain why agreement morphology is there in the first place; hence, Torner is forced to consider this agreement as "nothing more than a simple historical vestige without any linguistic value: the fossilisation of the old agreement in the heart of the Latin noun phrase has become a trait of morpheme selection" (Torner, 2005, fn. 27).

[13] Recall that English *–ly* is mutually exclusive with degree morphology, which has been used as an argument for the inflectional analysis of *–ly*, as English does not allow more than one inflectional suffix per word, cf. the discussion in section 3.1.1.

adjective stem, being followed by feminine morphology, as illustrated by the examples below.

(3.10) a. *Italian*
lent-issim-a-mente / *lent-a-ment-issim-o
slow-SUP-FEM-mente / slow-FEM-mente-SUP-MASC
'very slowly'

b. *Spanish* (Torner, 2005)
fuert-ísim-a-mente / *fuert-e-ment-ísim-o
strong-SUP-FEM-mente / strong-FEM-mente-SUP-MASC
'very strongly'

The fact that absolute superlative suffixes intervene between the base adjective of an adverb and *–mente* does not speak against the inflectional analysis, but is problematic for the derivational approach. In particular, if *–mente* as a derivational suffix follows degree morphology, this means that it violates the derivation-before-inflection principle also in this case. Moreover, it is unclear what prohibits the suffixes *–ísim–*/*–issim–* to attach to *–mente*, that is, to the adverb stem, on this analysis.

By contrast, the formation of adverbial absolute superlatives in languages like Italian and Spanish is straightforwardly accounted for by the analysis of adverbs as containing adjective–noun combinations. If *–mente* is a nominal morpheme modified attributively by the base adjective, this explains why degree morphology cannot attach to it, but attaches to the adjective.

In the light of these facts concerning adverbial absolute superlatives in Romance languages, also English adverbial comparatives and superlatives may be looked at from a somewhat different perspective now, than the one discussed in section 3.1.1. Unlike Italian or Spanish, English does not allow degree morphology to intervene between the base adjective and *–ly*, as the ungrammaticality of forms like **quickerly* in (3.5) testifies. In fact, however, English differs less from Spanish or Italian with respect to synthetic comparative/superlative formation, than may seem at the first glance. Specifically, like these Romance languages, it also forms comparatives/superlatives by attaching degree morphology to the base adjective (rather than to *–ly*, cf. **quicklier*); the difference is only that in English *–ly* has to be deleted in this case (cf., e.g., Sugioka & Lehr, 1983; Zwicky, 1989, 1995). In other words, synthetic comparatives/superlatives of English *–ly* adverbs and of their base adjectives are identical in form. For an overview, available and unavailable comparative forms of *–ly* adverbs in

English are given below.[14]

(3.11) Children learn {more quickly/**quicker**/*quicklier/*quickerly} than adults.

This phenomenon, which did not receive much attention in the literature, is difficult to explain under the derivational analysis of *–ly*. Apart from the fact already mentioned above that it is not clear what disallows degree morphology to attach to the adverb stem under this analysis, it is surprising that—in order to attach to the adjective stem instead—inflectional degree morphology is able to alter the adverb stem, deleting that very derivational suffix that is supposed to form adverbs as members of an independent lexical category.

The inflectional analysis gives by contrast a straightforward explanation for this phenomenon: Since English does not allow there to be more than one inflectional suffix in a word, one of them has to be deleted. The nominal analysis offers an alternative approach to these data. In itself it does not explain why English differs from Italian or Spanish in not permitting degree morphology to intervene between the adjective stem and *–ly* without deleting the latter. However, the inability of degree morphology to attach to *–ly* is straightforwardly accounted for as an instance of its inability to attach to nominal stems.

Deletion under coordination Another fact that may be used as an argument in favor of the nominal analysis of *–ly* and *–ment(e)* concerns the possibility of their deletion. Let us start again with the Romance data first. In Spanish, *–mente* is able to delete under conjunction, disjunction, and in comparatives, as illustrated by the examples below.

(3.12) a. inteligente y profundamente
'intelligently and profoundly' (Zagona, 1990)
b. directa o indirectamente
'directly or indirectly' (Zagona, 1990)
c. más ampulosa que profundamente
'more pompously than profoundly' (Kovacci, 1999)

[14]Note that there is a small group of deadjectival adverbs in English that are formed without *–ly*, thus being identical in form with their adjectival counterparts (e.g., *fast*, *hard*). Obviously, since *–ly* is absent in such adverbs in the positive form, it need not be deleted in the comparative and superlative (cf. *faster*, *harder*). The same holds for non-deadjectival adverbs like *soon* (cf. *sooner*).

d. tanto técnica como teóricamente
'both technically and theoretically' (Torner, 2005)

Zagona (1990) argues that this phenomenon, which is neither grammatically marginal nor dialectally restricted in Spanish, is an argument against the analysis of *–mente* as either a derivational or an inflectional suffix, because Spanish does not allow to elide suffixes of either type, as shown by the following examples:

(3.13) a. *industrializa- y modernización
'industrialization and modernization'
b. *hablar- y escribiré
'I will say and write' (Zagona, 1990)

By contrast, Spanish allows to elide the heads of non-final compounds in a coordination of endocentric compounds with an identical head, such as in the examples in (3.14).[15]

(3.14) a. (países) centro y sudamericanos
'Central and South American (countries)'
b. (datos) tanto macro como microeconómicos
'both macro- and micro-economic (data)'
c. (consonantes) pre o postpalatales
'pre- or post-palatal (consonants)' (Kovacci, 1999)

Thus, with respect to deletion under coordination, *–mente* in Spanish patterns together with head constituents of compounds and not with suffixes, which suggests that adverbs formed by *–mente* are compounds as well and that *–mente* is a root, rather than a suffix.

Discussing the phenomenon of *–mente* deletion under coordination in Spanish, Déchaine & Tremblay (1996) point out that analogous phenomena do not exist in English and French. Indeed, a coordination of two *–ly* adverbs with an elided *–ly* in the first part is generally not acceptable in English, as the ungrammaticality of the morphemic equivalent of (3.12a) demonstrates:

(3.15) *intelligent- and profoundly

[15] Torner (2005) points out that the compound status of the constructions in (3.14) is not certain, as their first parts may also be analyzed as prefixes, which makes sense particularly for *pre–* and *post–* in (3.14c). However, see Fábregas (2010) for arguments that such morphemes are prepositions and, thus, roots, rather than prefixes.

In fact, however, deletion of the first *–ly* within adverb coordination *is* acceptable in some cases, e.g., in such phrases as *direct and/or indirectly* and *fortunate or unfortunately*, which are well attested. Below are some web examples with these phrases, in which the *–ly*-less conjunct/disjunct is unambiguously an adverb and which are almost certainly produced by native speakers.[16]

(3.16) a. Precisely because science deals with only what can be known, **direct or indirectly**, by sense experience, it cannot answer the question of whether there is anything—for example, consciousness, morality, beauty or God—that is not entirely knowable by sense experience.[17]

b. Surety Accountants shall not be liable for any damages **either direct or indirectly** resulting from the use of this site or the information contained on this site at any point in time.[18]

c. Each of our **direct and indirectly** funded program areas was developed to meet a specific goal such as childcare quality, affordability, or capacity.[19]

(3.17) a. **Fortunate, or unfortunately,** depending on which side you are on, property division includes the division of debts, and the Court is required to make an equitable division of all marital property and all marital debt.[20]

b. **Fortunate or unfortunately** for you, you chose to live in a neighborhood that is in its rebirth phase.[21]

c. The undertaking to which this series of lectures addresses itself is, it must be confessed, a pretentious one. There is involved, first the recognition that the wheel of destiny has turned. It has now come to a momentary pause, and the destinies of the world, **fortunate or unfortunately**, are placed in our surprised, reluctant and untrained hands.[22]

[16] Examples with these phrases were not found in the BNC.

[17] http://opinionator.blogs.nytimes.com/2012/05/10/can-physics-and-philosophy-get-along/

[18] http://www.suretyaccountants.com.au/legal.php

[19] http://aspenpitkin.com/Departments/Kids-First/Providers-/

[20] http://www.turnerlawoffices.com/property-division/

[21] http://www.blueoregon.com/2007/05/this_is_my_city/#c370181

[22] http://www.thecrimson.com/article/1949/12/8/excerpts-from-flanders-lectures-psenator-ralph/

The examples above show that the phenomenon of *–ly* deletion under coordination does exist in English, which, to my knowledge, has not been acknowledged in the literature yet. Clearly, it is not comparably general and productive to *–mente* deletion in Spanish, being acceptable only in a restricted range of phrases. However, even in this case, *–ly* contrasts with both derivational and inflectional suffixes in English, which can never be elided in a similar way, cf. (3.18) and (3.19) below.[23]

(3.18) a. *industrializ- and modernization
b. *sex- and racist

(3.19) a. *walk- and talks
b. *tall- and stronger

(3.20) a. black- or whiteboard
b. pre- and post-modifiers

Since head constituents of compounds, by contrast, can undergo deletion under coordination in English, as in (3.20), the data in (3.16)–(3.17) demonstrate that *–ly* patterns together with roots and not with suffixes, suggesting that it is a root itself, rather than a suffix.

Complements of adverbs Finally, Baker (2003, 234–235) claims that another argument in favor of the nominal analysis of *–ly* comes from the fact that both attributive adjectives and adverbs formed by *–ly* generally cannot take complements in English. The argument goes as follows.

Jackendoff (1977, 25) observed that *–ly* adverbs cannot subcategorize for prepositional, sentential, or infinitival complements, unlike the adjectives they are derived from, providing the following series of examples as evidence:

(3.21) a. Tired (of the noise), John left the room.
b. Tiredly (*of the noise), John left the room.

[23] Spencer (2005, 82) notes that, although judgements vary, the following examples with elided suffixes seem to be allowable (but points out that **irrepair- and irreplaceable* seems to be completely excluded):

(i) a. write- or print-able
b. mouse- or rat-like

However, the status of both *–able* and *–like* as suffixes is not indisputable, as they may be plausibly argued to be roots instead. Note also that, while (ib) is attested on the web, (ia) is not.

(3.22) a. Fearful (of a revolt), the king ordered a purge.
b. Fearfully (*of a revolt), the king ordered a purge.

(3.23) a. The manner in which John grimaced was expressive (of his needs).
b. John grimaced expressively (*of his needs).

(3.24) a. Happy $\left\{\begin{matrix}\text{at their departure}\\ \text{that they were leaving}\end{matrix}\right\}$, John waved goodbye.
b. Happily $\left\{\begin{matrix}\text{*at their departure}\\ \text{*that they were leaving}\end{matrix}\right\}$, John waved goodbye.

(3.25) a. Eager ($\left\{\begin{matrix}\text{with anticipation}\\ \text{to leave}\end{matrix}\right\}$), John chewed his nails.
b. Eagerly ($\left\{\begin{matrix}\text{*with anticipation}\\ \text{*to leave}\end{matrix}\right\}$), John chewed his nails.

Jackendoff took these data to be a manifestation of a major syntactic difference between adjectives and adverbs and used them as an argument against the analysis of adverbs as being transformationally derived from adjectives (Jackendoff, 1977, § 2.3). In fact, however, adverbs differ only from *predicative* (and post-nominal) adjectives in not being able to take complements, rather than from adjectives *in general*, and this is what the data in (3.21)–(3.25) really show. By contrast, (pre-nominal) *attributive* adjectives pattern with adverbs in this respect, being subject to the *head-final constraint* discussed in section 1.3.3.

In this connection, Baker (2003) points out that the latter fact speaks in favor of the nominal analysis of *–ly*. In particular, if the base adjectives of *–ly* adverbs are attributive modifiers of the nominal morpheme *–ly*, the inability of *–ly* adverbs to take complements follows automatically from the inability of attributive adjectives to take complements, cf. (3.27) below. Note that what is relevant in this case is the inability of attributive adjectives to take complements placed *post-nominally*, rather than immediately following them, i.e., their inability to form *split*, or *discontinuous*, APs.

(3.26) a. John showed everyone his photo album proudly (*of his daughter).
b. You often meet men proud of their daughters.
(Baker, 2003, 235)

(3.27) a. *proud-**ly** of his daughter
*a proud **man** of his daughter

b. a man proud of his daughter
This man is proud of his daughter.

Thus, even if there is no generally accepted explanation of the inability of attributive adjectives to take complements, the nominal analysis of *–ly* at least eliminates the necessity of a separate explanation for the inability of adverbs to take complements, which in fact is missing as well[24], by reducing the latter to the former.

However, this argument by Baker for the nominal analysis of *–ly* may be objected to on the ground that the generalization that adverbs cannot take complements is, in fact, not correct. Indeed, it has many counterexamples, such as, for instance, the following ones, which are often cited in the literature:

(3.28) Unfortunately for our hero, Rome burned.
(based on Jackendoff, 1977, 78)

(3.29) a. They will decide independently of my view.
b. (John succeeded) independently from our efforts.
(Alexiadou, 1997, 5, 37)

(3.30) Similarly to what Bob postulated, the shape of the universe seems to be muffin-like. (Ernst, 2002, 30)

Déchaine (1993, 70) also cites the following list of complement-taking adverbs, which, according to her, are currently used predominantly in legalese:[25]

(3.31) agreeably to X, comfortably to X, concurrently with X, conditionally on X, differently from X, inconsistently with X, preferably to X, previously to X, subsequently to X, suitably to X

In fact, however, the inability of attributive adjectives to take (postnominal) complements is not unexceptional either, as shown, e.g., by Escribano (2005) in his recent comprehensive survey of discontinuous APs.

[24] In a well-known analysis, Travis (1988) argued that adverbs cannot take complements because they do not project to a phrasal category, but remain as heads. However, the head analysis of adverbs is problematic insofar as adverbs can take modifiers and, in fact, sometimes even complements, as will be discussed below (see also Alexiadou, 1997, § 2.3.2, for a discussion of this issue).

[25] Note that Déchaine uses the fact that some adverbs can take complements as an argument for the approach to adjectives and adverbs as positional variants of a single category (see also the discussion in Vinokurova, 2005, § 4.6).

Therefore, the question is rather whether the set of the base adjectives of complement-taking *–ly* adverbs coincides with the set of adjectives that can form discontinuous APs. If these sets coincide, this would only reinforce Baker's argument for the nominal nature of *–ly*. The data presented below show that these sets indeed coincide.

First, the adjectival counterparts of the standardly cited complement-taking adverbs *unfortunately*, *independently*, and *similarly*, illustrated in (3.28)–(3.30), can all form discontinuous APs with post-nominal complements, as the examples in (3.32)–(3.34) from the BNC and the web demonstrate.

(3.32) a. It was an **unfortunate evening for** me: I was knocked out in the second round, the only time I was knocked out, either at Eton or at Oxford. [BNC: H0A 873]

b. It's been a very **unfortunate episode for** all concerned. [BNC: HGM 1881]

(3.33) a. There are currently few, if any, civil society organisations in Vietnam that are in a position to give a truly **independent opinion of** the Government or the Communist Party.[26]

b. That stance reflects growing concern in Central America about the mounting cost of the drug war, which is prompting some leaders to take a more **independent line from** the United States.[27]

(3.34) a. The three years I spent studying took a **similar shape to** my school years; on the surface I did well, passing my exams with seemingly not too much trouble. [BNC: ADG 204]

b. Along a different line of thought, Sherrington had thus reached **similar conclusions to** those of Pavlov in his famous conditioning experiments. [BNC: AMG 422]

Furthermore, the same also holds for the base adjectives of Déchaine's adverbs in (3.31); in fact, some of them occur among Escribano's (2005) examples of felicitous discontinuous APs with post-nominal complements reproduced below.

[26] http://www.eeas.europa.eu/vietnam/csp/nip_05_06.pdf

[27] http://vancouverdesi.com/news/guatemala-blames-washington-for-boycott-of-drug-summit/

(3.35) a subsequent article to Chomsky's
a previous version to this one
a prior attempt to Russell's
a preferable solution to Chomsky's
an alternative view to Chomsky's
an analogous hypothesis to Abney's
a comparable situation to ours
a different view from yours
an equivalent idea to that
a parallel theory to Frege's
a separate room from ours
a similar car to mine (Escribano, 2005, 566)

The inverse holds too, as the adverbial counterparts of adjectives that can form discontinuous APs when used attributively, such as the ones in (3.35), can take complements as well. The examples below illustrate this for some of the adjectives in (3.35) whose adverbial counterparts did not occur in earlier examples yet:

(3.36) a. To get you to the product information you need as quickly as possible, we have a simple three step process. [...] **Alternatively to** the above process, if you exactly know what you're after, then simply enter the product name and select the branch in the boxes at the left.[28]
b. Whilst Chomsky's major achievement was to suggest that the syntax of natural languages could be treated **analogously to** the syntax of formal languages, so Montague's contribution was to propose that not only the syntax but also the semantics of natural language could be treated in this way.[29]
c. The Soviet Union did not admit until 1971 that Gagarin had ejected and landed **separately from** the Vostok descent module.[30]

By contrast, non-complement-taking adverbs, like the ones in Jackendoff's examples in (3.21)–(3.25), have adjectival counterparts that cannot form discontinuous APs when used attributively, as shown below.

[28] http://www.metroll.com.au/home/index.php
[29] http://www.cl.cam.ac.uk/teaching/1011/L107/semantics.pdf
[30] http://en.wikipedia.org/wiki/Vostok_1

(3.37) a. *a tired neighbor of the noise
b. *a fearful king of a revolt
c. *an expressive manner of John's needs
d. *a happy host that they were leaving
e. *an eager man to please

Thus, there is a clear parallelism between *–ly* adverbs and specifically *attributive* adjectives with respect to their ability/inability to take complements. The analysis of *–ly* as a nominal morpheme attributively modified by the base adjectives of adverbs straightforwardly accounts for this parallelism. Furthermore, it makes it unnecessary to provide an independent explanation of why some adverbs cannot take complements that is different from the explanation of why some attributive adjectives cannot take post-nominal complements. By contrast, if *–ly* is analyzed as a suffix, either a derivational or an inflectional one, this parallelism between adverbs and only attributive adjectives, rather than adjectives in general, is unexpected and requires an independent explanation. A suffixal analysis of *–ly* also needs to explain why some adverbs cannot take complements, a question that lacks a satisfactory and generally accepted answer within this type of analysis.

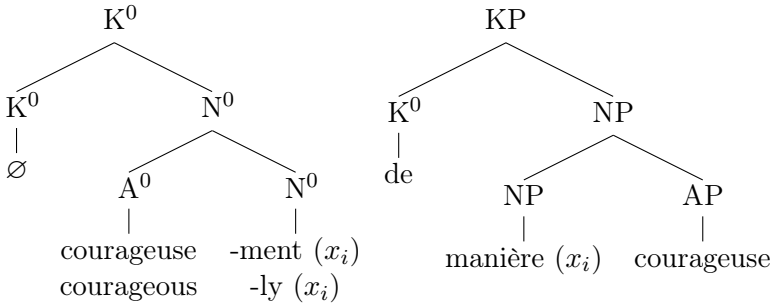
3.1.2.2 Internal structure of *–ly* adverbs

Section 3.1.2.1 presented several lines of evidence suggesting that English *–ly* is a nominal morpheme modified attributively by the base adjectives of adverbs, rather than a suffix (this evidence will be briefly summarized again in section 3.1.2.3, together with further arguments for the PP analysis of adverbs in English). If *–ly* is a nominal morpheme, the next question is what adverbs are as a whole. They may not be compound nouns, for adverbs do not have the distribution of nouns, as Torner (2005, 120–121) justly points out, using it as an argument against the nominal analysis of Spanish *–mente*. However, the nominal analysis of *–ly*, in fact, does not necessarily imply that adverbs *are* adjective–noun compounds. They may also be analyzed as PPs with a null P head that *contain* adjective–noun combinations, as proposed by Déchaine & Tremblay (1996). This is the line of analysis that will be pursued in this thesis. Let me, therefore, first briefly present Déchaine & Tremblay's (1996) proposal.

In their analysis of the internal structure of English *–ly* adverbs and their *–ment* counterparts in French, Déchaine & Tremblay (1996) mainly focus on *manner* adverbs; nevertheless, this type of analysis holds for ad-

verbs in general, as will be discussed later on. Based on the evidence for the nominal nature of *–ly/–ment* and on the semantic similarity between manner adverbs formed by means of *–ly/–ment* and adverbial PPs of the form *in a(n) A manner/de manière A*, Déchaine & Tremblay (1996) argue that *–ly/–ment* manner adverbs can be analyzed as X^0 counterparts of *de manière A* adverbials.[31] Accordingly, the internal structure of these two types of manner adverb(ial)s is assumed by them to be as shown below:[32]

(3.38) Anne$_i$ ...



Thus, the analysis proposed by Déchaine & Tremblay (1996) includes the following key elements. First, they assume a *semantically vacuous* K head to be present both in prepositional adverbials and in adverbs formed by *–ly/–ment*, with the difference that it is overt in the former case, but null in the latter.[33] Since K and P are understood by them as sub-types of prepositional elements, rather than as distinct categories, this implies that several types of manner adverbial expressions are uniformly treated as belonging to the same category: *–ly/–ment* adverbs, adverbials of the form *in a(n) A manner/de manière A*, as well as *with N/avec N* adverbials, such as *with courage/avec courage*. Note also that the assumption about the presence of a Case-bearing head specifically in *–ment* adverbs in French accords well with the diachronic fact that Latin *mente* is Case-

[31] Note that manner adverbs are proposed to be X^0 versions of French, rather than English, adverbial PPs. The implications of this will become clear in what follows.

[32] The attempt to relate manner adverbs and prepositional manner adverbials is not new. For example, in the transformational tradition, J. Katz & Postal (1964) assumed that *–ly* manner adverbs are derived from PPs of the form *in a(n) A way* by deleting *in*, *a(n)*, and *way* (see also Emonds, 1976, 156ff., for a discussion).

[33] KP (Kase Phrase) is a functional projection on top of DP which bears Case features (Lamontagne & Travis, 1986, 1987; see also Löbel, 1994; Bittner & Hale, 1996, among many others). Hence, grammatical prepositions, such as English *of* or French *de*, may also be argued to be K heads.

marked, being the ablative form of *mens* 'mind'.[34]

Further, Déchaine & Tremblay (1996) assume that the complement of K is an *inalienable* noun (*–ly/–ment/manière*) modified by an attributive adjective and that its internal argument is identified with the subject, as indicated in (3.38).

Finally, following Travis (1988), Déchaine & Tremblay (1996) assume that manner adverbs are heads (i.e., Ks), unlike prepositional adverbials, which are maximal projections (KPs/PPs). Travis argued that this analysis accounts for the fact that prepositional adverbials may only be post-verbal, whereas *–ly* adverbs are "transportable", being able to occur both pre- and post-verbally, as observed by Jackendoff (1977), cf. his examples in (3.39) below. According to Travis, this distributional difference comes about insofar as prepositional adverbials can only be "predicated" of VP because of their phrasal status, while *–ly* adverbs, being heads, can adjoin to V, V′, or VP.

(3.39) a. Bill dropped the bananas $\left\{\begin{matrix}\text{quickly}\\ \text{with a crash}\end{matrix}\right\}$.

b. Bill $\left\{\begin{matrix}\text{quickly}\\ \text{*with a crash}\end{matrix}\right\}$ dropped the bananas.

(Jackendoff, 1977, 73)

Adopting the general lines of Déchaine & Tremblay's (1996) analysis, I will, however, make a number of modifications to the internal structure of *–ly* adverbs that has been proposed by them.

First, I will assume that the prepositional element in the structure of *–ly* manner adverbs is a *semantically non-vacuous* P head, which assigns the manner θ-role to the noun *–ly* and, thus, semantically links manners to the event structure, cf. section 3.2.1. The alternative analysis in terms of a semantically vacuous K head, as proposed by Déchaine & Tremblay (1996), will, however, be considered as well, cf. section 3.2.2. The reason why the latter analysis will not be pursued in this thesis has to do with the following consideration, which will be discussed in more detail in section 3.2.2. If manner adverb(ial)s are K(P)s, there must be a head that assigns Case to them, as K does not assign Case, it *is* Case (Lamontagne & Travis, 1986, 1987). Hence, it may be assumed that they are an argument of (some) verbs (cf., e.g., Baker, 2003, 235–236), or, more precisely,

[34] Déchaine & Tremblay (1996) point out that the presence of a silent prepositional head has been advocated also for other types of adverbials, in particular, for bare NP adverbials such as *Friday* or *last week* (cf. McCawley, 1988).

that they are licensed by a special functional head in the extended projection of V, which θ-marks them and assigns Case to them. However, this approach implies that there is one more silent head to argue for and also that a null manner pronoun should be present syntactically in cases when an overt manner adverb(ial) is absent. The former analysis in terms of a P head, by contrast, does not have these implications and will, therefore, be preferred.

Second, contra Travis (1988) and Déchaine & Tremblay (1996), I will assume that *–ly* adverbs are maximal projections, rather than heads, because they can generally take modifiers (*very carefully*) and some of them can take complements (*independently of*), as shown in section 3.1.2.1 (see also Alexiadou, 1997, § 2.3.2, for a discussion). Hence, if both *–ly* adverbs and prepositional adverbials are phrasal, the contrast illustrated in (3.39) requires a different explanation.[35] Section 3.3 will discuss an explanation of this contrast in terms of *relative weight* (Alexiadou, 1997; Ernst, 2002; see also Cardinaletti & Starke, 1994). According to it, prepositional adverbials cannot occur pre-verbally in some cases because they are heavier than the rest of the VP in these cases, while *–ly* adverbs are not. However, also prepositional adverbials may in fact be pre-verbal if they are lighter than the post-verbal material.

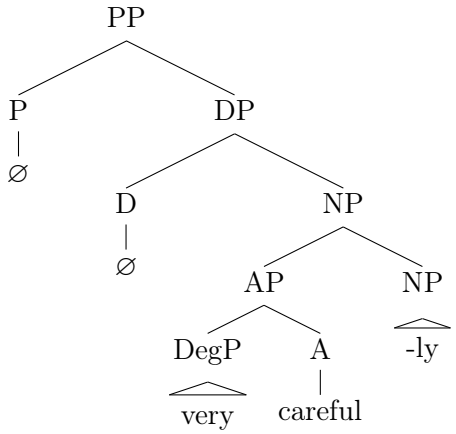
Third, I will assume a DP layer to be present between PP and NP in the structure of *–ly* adverbs, as it is the case with adverbials of the form *in a(n) A manner*, which contain an overt indefinite determiner. By contrast, Déchaine & Tremblay (1996) take the morphosyntax of *–ly*/*–ment* adverbs to be analogous to the structure of French *de manière A* adverbials, viewing the lack of an overt determiner in the latter as an indication of the absence of DP. I will not discuss the structure of French manner adverb(ial)s; in particular, I will not address the question of whether it contains a DP layer. However, with respect to English, I will standardly assume that P takes DP as its complement, rather than NP.[36]

Summing up, *–ly* adverbs will be analyzed in this thesis as PPs whose internal structure is as represented in (3.40a), and not as Ks, as proposed by Déchaine & Tremblay (1996). They will, thus, be assumed to be structurally identical to such adverbial PPs as manner adverbials of the form *in a(n) A manner*, cf. (3.40b).

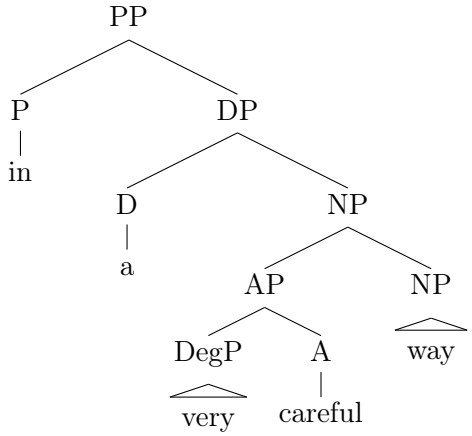
[35] In fact, it is unclear that Travis' (1988) analysis actually gives an explanation for the contrast in (3.39). I will, however, not go into a discussion of this issue.

[36] Similarly, also K is standardly assumed to take DP, rather than NP, as a complement (see, e.g., Lamontagne & Travis, 1986, 1987; Löbel, 1994; Bittner & Hale, 1996; Bayer et al., 2001; Alexiadou et al., 2007).

(3.40) a.



b.



According to this analysis, *–ly* adverbs are structurally identical with *in a(n) A manner* adverbials, but differ from them insofar as the P and D heads that *–ly* adverbs contain are null and the adjective–noun combinations in their structure are morphologically merged. This analysis also implies that degree modifiers of *–ly* adverbs, such as *very* in (3.40a), are in fact degree modifiers of the underlying adjectives, i.e., heads of DegP located in [Spec,AP]. This means consequently that word boundaries do not reflect constituency in this case, as *very* and *careful* form a constituent, but do not constitute a word unit, while *careful* and *–ly*, which form a word unit, are not a constituent to the exclusion of *very*.[37] This mismatch between word boundaries and constituency in *–ly* adverbs appears to be similar to the situation with such compounds as *truck driver*, for which it has been argued that the two roots combine before the suffix *–er* attaches

[37] The same holds for complements of *–ly* adverbs, as in *independently of my view*.

(see, e.g., Harley, 2009a):

(3.41) a. [[very careful] -ly]
b. [[truck drive] -er]

The discussion so far has focussed on manner adverbs since they were of main concern for Déchaine & Tremblay (1996) and are the subject of this thesis. Still, the PP analysis applies to all *–ly* adverbs independently of their semantic class, as the evidence for the nominal nature of *–ly* and other arguments for the PP analysis summarized in section 3.1.2.3 hold for *–ly* adverbs in general, rather than some individual semantic classes of them. Furthermore, adverbial PPs that are semantically equivalent to *–ly* adverbs, whose existence in the case of manner adverbs was seen by Déchaine & Tremblay (1996) as suggesting the PP analysis of them, exist for other semantic adverbial classes as well. Like manner adverbial PPs of the form *in a(n) A manner*, prepositional adverbials of other semantic classes also contain semantically "light" nouns, like *time*, *location*, *degree*, etc., modified by the base adjectives of the corresponding *–ly* adverbs:

(3.42) a. He drives *carefully.* (manner adverb)
∼ in a careful way/manner
b. He *fully* understands the problem. (degree adverb)
∼ to a full extent/degree
c. He *regularly* goes to the gym. (frequency adverb)
∼ on a regular basis
d. He was *briefly* married. (duration adverb)
∼ for a brief time
e. He lives *centrally.* (location adverb)
∼ in a central location
f. He is *financially* independent. (domain adverb)
∼ from a financial point of view
g. He will *possibly* get fired. (modal adverb)
∼ in a possible course of events

On the PP analysis proposed above, *–ly* adverbs of various semantic classes, like the ones in (3.42), have an identical internal structure represented in (3.40a). The differences between them are thus merely semantic in nature; most importantly, I assume that the semantics of the P heads that they contain are different (for the discussion of the semantics of P in manner adverbs, see section 3.2). The next question is which grammatical function and semantic contribution the noun *–ly* has inside adverbs and

if its function and contribution differ across semantic classes of adverbs.

The main semantic contribution of adverbs is conveyed by their base adjectives, which have to occur inside PPs, as P is necessary to link them to the verbal structure syntactically and to the event structure semantically. However, adjectives cannot occur in PPs on their own—they need nouns to adjoin to. Moreover, English requires the head nouns of attributive adjectives to be *overt*; therefore, a dummy noun such as *one* needs to be inserted in the absence of a semantically full noun, as the following examples from Jackendoff (1971, 28) demonstrate:[38]

(3.43) a. I like Bill's yellow shirt, but not $\left\{\begin{array}{l}\text{Max's red one}\\ \text{*Max's red}\end{array}\right\}$.

b. I like Bill's yellow shirt, but not $\left\{\begin{array}{l}\text{*Max's one}\\ \text{Max's}\end{array}\right\}$.

In view of this fact, I suggest that *–ly* is a semantically (near-)empty dummy noun which is inserted for grammatical reasons, namely, because the base adjectives of deadjectival adverbs require that their head nouns are overt.[39] In other words, I assume that the presence of *–ly* in adverbs is a manifestation of a more general constraint on the modified nouns of attributive adjectives in English.[40]

[38] The only exception to this requirement are expressions like *the poor*, *the disabled*, *the French*, etc., whose null noun has a very restricted interpretation, being specified for the features [+HUMAN, +GENERIC, +PLURAL] (Kester, 1996a; Borer & Roy, 2010).

[39] Differently from what is proposed in this thesis, *–ly* has sometimes been suggested to have a rich semantics, see, e.g., G. Katz (2005) for an analysis of *–ly* in such adverbs as *surprisingly* when they modify gradable adjectives, as in *surprisingly full*. See also section 2.3.2 for a discussion of the semantics of *–ly* in manner adverbs in connection with the analysis of M. Schäfer (2008).

[40] The existence of this constraint in English is possibly due to the absence of overt agreement morphology on adjectives in it. Indeed, languages like German or Russian, which have overt adjectival agreement, do not require the head nouns of attributive adjectives to be overt; furthermore, deadjectival adverbs are formed in these languages by means of default inflectional morphology (∅ in German, *–o*/*–e* in Russian), that is, without a nominal morpheme (for an analysis of deadjectival adverbs in Ukrainian—which are formed by means of the default morphemes *–o*/*–e* like in Russian—as PPs containing a null noun, see Kariaeva (2009)).

Romance languages present a counterexample to this cross-linguistic hypothesis, as they have overt adjectival agreement morphology and also allow attributive adjectives to have null head nouns, but still form deadjectival adverbs using a nominal morpheme (*–ment(e)*). A possible explanation of this fact may be that the default adjectival form in Romance languages, unlike in German and Russian, is the masculine form and not a separate form. Hence, adverbs formed by means of default inflectional morphology without a nominal morpheme would be identical with the masculine form of adjectives.

Specifically in the case of manner adverbs, I will implement the idea that *–ly* is semantically (near-)empty by assigning it the "light" classifier-like semantics $\lambda m.\mathbf{manner}(m)$, as is also done in Baker (2003, 235–236). In a more general perspective, i.e., considering that there are many different semantic classes of *–ly* adverbs, this approach is likely to be unsatisfactory, as a different classifier-like semantics will need to be assigned to *–ly* in each case, thus making it highly ambiguous.[41] Only the incomplete list of adverbial classes in (3.42) already yields **manner**, **degree**, **time**, **location**, **proposition**, and something like **respect** as various possible meanings of *–ly*. From this perspective, it is probably more adequate to assign *–ly* an even more general semantics, e.g., $\lambda\varepsilon.\mathbf{entity}(\varepsilon)$, where ε is a super-type which comprises various sorts of particulars (rather than an underspecified type, as it is used in this thesis, see section 1.3.1). Since, however, this thesis is only concerned with manner adverbs, I will assume for simplicity that in manner adverbs *–ly* denotes $\lambda m.\mathbf{manner}(m)$, i.e., has the same light semantics as *manner* in prepositional adverbials of the form *in a(n) A manner*, and will, thus, avoid introducing the super-type of entities.[42]

Section 3.2 will proceed with the compositional semantics of *–ly* manner adverbs on the PP analysis of their internal structure proposed above. Before, however, section 3.1.2.3 will provide a brief overview of the arguments for the PP analysis of *–ly* adverbs.

3.1.2.3 Overview of arguments

Section 3.1.2.1 presented several pieces of evidence that English *–ly* and Romance *–ment(e)* are nominal morphemes and not suffixes, as commonly assumed. This evidence forms the basis of the argument for the analysis of *–ly* adverbs as PPs advanced above. In what follows, I will summarize this evidence specifically for English *–ly*, leaving aside its Romance counterpart.

First, synthetic comparatives and superlatives of English *–ly* adverbs are formed by deleting *–ly* and attaching degree morphology to the adjective stem, as, e.g., in *quicker*, the comparative form of *quickly*, rather than by attaching it to the adverb stem, that is, to *–ly*. The fact that synthet-

[41] This seems to be the direction taken by Baker (2003), who assigns the semantics of **manner** to *–ly* in manner adverbs and that of **degree** to *–ly* in degree adverbs.

[42] Déchaine & Tremblay (1996) do not formulate their semantics of *–ly*, but suggest that the internal argument of *–ly* in manner adverbs is identified with the subject, as mentioned above. This assumption will not be followed in this thesis.

ic comparative/superlative formation of *–ly* adverbs involves the underlying adjective stem and not the adverb stem does not speak against the inflectional account of *–ly* adverbs, but is problematic for the derivational approach. By contrast, it follows straightforwardly if the base adjectives of *–ly* adverbs are analyzed as attributive modifiers of the nominal morpheme *–ly*.

Second, *–ly* is able to delete under coordination, as, e.g., in *direct or indirectly*, although this phenomenon is more restricted in English, than, for instance, in Spanish. This fact is unexpected on the analysis of *–ly* as either an inflectional or a derivational suffix, since English does not allow to elide suffixes of either type. By contrast, the head constituents of non-final compounds in coordinations of compounds with identical heads can be deleted in English. Thus, with respect to deletion under coordination, *–ly* patterns with roots and not with suffixes, which suggests that it is a root itself and consequently that *–ly* adverbs are compounds rather than suffixed forms.

Third, in their majority, both attributive adjectives and *–ly* adverbs cannot take complements in English, differing in this respect from predicative adjectives. Furthermore, those (comparably few) *–ly* adverbs that can take complements derive from adjectives that are themselves able to take (post-nominal) complements when used attributively. This parallelism between *–ly* adverbs and only attributive adjectives—that is, only a positional variant of adjectives, rather than adjectives as a whole—with respect to their (in)ability to take complements follows on the analysis of *–ly* as a nominal morpheme modified attributively by the base adjectives of adverbs, but is surprising both on the derivational and the inflectional approach to *–ly* adverbs. Moreover, these approaches entail that a separate explanation of the inability of some adverbs to take complements is necessary (a satisfactory explanation of it is, however, missing), while the nominal analysis reduces it to the inability of the corresponding attributive adjectives to take post-nominal complements.

Thus, the facts summarized above are naturally accounted for by the nominal analysis of *–ly*, but are unexpected or problematic for the derivational and inflectional accounts of *–ly* adverbs. Furthermore, the data from section 3.1.1, which have been used as arguments for the inflectional approach, can in fact be also explained on the analysis of *–ly* adverbs as PPs which contain the nominal morpheme *–ly* modified by the base adjectives. **First**, the fact that *–ly* adverbs allow the same degree modifiers as adjectives follows trivially if degree modifiers of *–ly* adverbs are analyzed as applying to the adjectives present in their structure. **Second**, the

fact that comparative/superlative morphology cannot attach to *–ly* may be explained on the nominal analysis as the inability of degree morphology to attach to noun stems.[43] **Third**, the fact that *–ly* adverbs do not participate in further derivation by suffixation may be accounted for on the same grounds as the inability of the corresponding PP adverbials of the sort exemplified in (3.42) to participate in derivation by suffixation. Indeed, forms like **in-a-careful-way-ness*, **to-a-full-extent-ish*, or **from-a-financial-point-of-view-hood* are unavailable, although derivational suffixes may attach to phrasal bases in general and to PPs in particular, as testified by such examples from the COCA as *above-averagehood*, *out-of-towner*, *over-the-topism*, *at-homeness*, etc. reported in Bauer et al. (2013, 513–514).[44]

Furthermore, the facts about the distribution of adverbs discussed in section 3.1.1 in connection with the claim concerning the complementary distribution of adjectives and adverbs are consistent with the PP analysis of *–ly* adverbs as well. **First**, the fact that *–ly* adverbs cannot *pre*-modify nouns accords with the inability of PPs to serve as pre-nominal modifiers, cf. (3.44), the latter presumably being due to the *head-final constraint* on modifiers in English (cf., e.g., Emonds, 1976; Williams, 1982; Escribano, 2004; see also section 1.3.3 for a discussion of the head-final constraint in connection with the inability of pre-nominal adjectives in English to take complements or adjuncts).[45] **Second**, if Payne et al. (2010) are right that

[43] It remains to be explained, though, why English does not allow degree morphology to attach to the base adjectives of *–ly* adverbs without the deletion of *–ly*, as it is the case in Italian and Spanish.

[44] The reason *why* PP adverbials such as the ones in (3.42) and their *–ly* counterparts do not serve as bases for further word-formation might be that all relevant derivations can be formed in a simpler way from the underlying adjectives, which make the main semantic contribution of such adverb(ial)s, and this blocks the more cumbersome de-adverbial derivations. Note also that *–ly* adverbs in fact do give rise to rare derivations, such as, e.g., *meagerliness* and *leanliness*, which are even attested in the COCA. I am grateful to Ingo Plag (p.c.) for a discussion on this issue.

[45] The following example from Escribano (2004, 5) suggests that in some cases non-head-final PP modifiers may be pre-nominal (*an above-average result*, *an after-lunch nap*, *under-the-tongue drops*, etc. are further examples of the same type):

(i) an [PP up-to-date] (linguistic) bibliography

Escribano (2004) hypothesizes that the head-final constraint does not apply to such modifiers because they are word-level units, as the dashes suggest, and hence probably result from a lexical process. Even if the assumption that the head-final constraint is inactive in the lexicon is correct, it does not hold for *–ly* adverbs—although they are single word units—on the analysis advocated here, as it implies that they are phrasal

–ly adverbs can *post*-modify non-deverbal nouns, this fact would accord with the ability of PPs to right-adjoin to NPs, cf. (3.45).

(3.44) a. *the under the table box
b. *the in the afternoon meeting

(3.45) a. the box under the table
b. the meeting in the afternoon

Third, also the fact that *–ly* adverbs cannot occur in the predicative position matches with the distribution of PPs, even though at first glance it may appear to the contrary in view of such examples as the following ones:

(3.46) a. Your box is under the table.
b. Our meeting is in the afternoon.

However, even if some PPs may be used predicatively, like the locative and temporal ones in the examples above, many may not, as the following examples show for some of the adverbials from (3.42), including the manner adverbial:

(3.47) a. *His driving is in a careful way.
b. *His understanding of the problem is to a full extent.
c. *His independence is from a financial point of view.

If PPs are assumed to be in general able to appear predicatively, the ungrammaticality of examples like the ones in (3.47) seems to be difficult to explain. If, by contrast, PPs are considered not to be able to occur in the predicative position, i.e., as complements of Pred, it may be argued that examples like those in (3.46) are in fact not instances of (non-verbal) predication. In particular, *be* may be argued to be a lexical verb in such cases, as suggested by its interpretation as *be located* in (3.46a) and *happen/occur* in (3.46b), rather than an auxiliary verb associated with Pred whose role is to bear tense/aspect and agreement morphology, see section 1.3.2. This view is supported by the fact that in languages with phonologically overt Preds, such as, for instance, Edo and Chichewa, PPs cannot be selected by Pred; instead of Pred, a lexical verb with locative/posture meaning or the verbal copula must be present, as shown by Baker (2003, 314–315). His examples from Edo and Chichewa are given below.

entities formed in the syntax. See also section 3.3.2 for a discussion of the head-final constraint with respect to left-adjunction of manner adverbs to verbal projections.

(3.48) *Edo*

a. *Òzó (yé/rè) vbè òwá.
Ozo PRED at house
'Ozo is in the house.'

b. Òzó rré òwá.
Ozo is.at house
'Ozo is in the house.' [*locative verb*]

c. Òzó mùdìá yè esuku.
Ozo stand at school
'Ozo is at school.' [*posture verb*]

(3.49) *Chichewa*

a. *Ukonde ndi pa-m-chenga.
net PRED on-3-beach
'The net is on the beach.'

b. Ukonde u-li pa-m-chenga.
net 3S-be on-3-beach
'The net is on the beach.' [*verbal copula*]

Thus, if it is assumed, with Baker, that PPs cannot serve as complements of Pred, the inability of *–ly* adverbs to occur predicatively follows straightforwardly on their analysis as PPs.

Finally, a general advantage of the analysis of *–ly* adverbs as PPs is the fact that it represents a major step towards eliminating adverbs as a separate lexical category and, thus, reducing the inventory of categories, for *–ly* adverbs constitute the predominant majority of adverbs.[46] Naturally, in order to dispense with adverbs as a category altogether, also non-deadjectival adverbs need to be shown to belong to other categories.[47]

Specifically in the case of manner adverbs, the morphosyntactic analysis of them as PPs turns out to map well onto their semantic analysis in

[46] Another question is whether the category of adverbs may be dispensed with cross-linguistically and, more specifically, whether the PP analysis of deadjectival adverbs, which has been discussed only with respect to English and Romance languages in this thesis, is possible and sensible for other languages as well. With respect to Slavic languages, see Kariaeva (2009) for an analysis of Ukrainian deadjectival adverbs as PPs containing a null noun in their structure; an analysis along these lines might possibly be applied also to adverbs in German. For analyses of adverbs as PPs in Finnish and Hungarian, see, e.g., Manninen (2003) and Kádár (2009), respectively. See also Baker (2003, 236–237) for a discussion of some other languages in this connection.

[47] There is also a small group of deadjectival adverbs that are formed by zero suffixation, rather than by means of *–ly*, such as, e.g., *fast* and *hard*. The PP analysis might be extended to them by arguing that the head noun of their base adjectives is null.

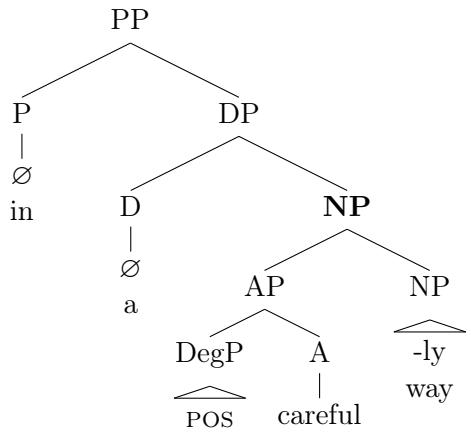
terms of manners, which has been argued for in section 2.3. This syntax–semantics mapping will be discussed in detail in the next section.

3.2 Semantics of manner adverbs

3.2.1 Lexical preposition

Adverbs formed by means of *–ly* have been argued in section 3.1.2.2 to be PPs which contain in their structure the nominal morpheme *–ly* modified attributively by the base adjective. Specifically in the case of manner adverb(ial)s, this analysis implies that *–ly* manner adverbs are structurally identical with their overtly prepositional counterparts of the form *in a(n) A way*, as demonstrated in (3.50) below for *carefully*. Let us now discuss the compositional semantics for this morphosyntactic analysis of manner adverbs, taking *carefully* as an example.

(3.50)



In accordance with the conclusions reached in section 2.3, I take manner APs to denote properties of manners, type $\langle m, t\rangle$. Under the assumptions concerning the semantics of gradability made in section 1.3.3, this implies that gradable manner adjectives like *careful* denote relations between manners and degrees, type $\langle d, mt\rangle$. In the positive form, they combine with the null morpheme POS to derive properties of manners as AP denotations:

(3.51) a. $[\![\text{careful}]\!] = \lambda d\lambda m.\mathbf{careful}(d)(m)$
b. $[\![\text{POS}]\!] = \lambda P_{\langle d,mt\rangle}\lambda m.\exists d\ [P(d)(m) \wedge d \geqslant \mathbf{d}_s]$

(3.52) $[\![\text{AP}]\!] = \lambda m.\exists d\ [\mathbf{careful}(d)(m) \wedge d \geqslant \mathbf{d}_s]$

Since *–ly* and *way* have been argued in section 3.1.2.2 to be semantically near-vacuous having the light classifier-like semantics in (3.53), the denotation of the higher NP in (3.50) is as in (3.54).

(3.53) $[\![\text{-ly}]\!] = [\![\text{way}]\!] = \lambda m.\mathbf{manner}(m)$

(3.54) $[\![\mathbf{NP}]\!] = \lambda m\ [\mathbf{manner}(m) \wedge \exists d\ [\mathbf{careful}(d)(m) \wedge d \geqslant \mathbf{d}_s]]$

Let us now turn to the semantics of P ($\varnothing/in$) and D ($\varnothing/a$) in (3.50). With respect to the P head, I suggest that it contributes in its semantics the manner function in (3.55), which has been introduced in section 2.3.2, and, thus, links manners to the event structure. In other words, I assume that the P head adjoins the noun *–ly* to the verbal structure syntactically and assigns it the manner θ-role semantically.[48]

(3.55) $[\![\text{P}]\!] = \lambda m \lambda e.\mathbf{manner}(m)(e)$

Further, I assume that the null D head in the structure of *–ly* manner adverbs has the same semantics of existential quantification over manners as its overt counterpart *a* in adverbials of the form *in a(n) A way/manner*, as both of these types of manner adverb(ial)s have the same interpretation.[49] Thus, let us see what the exact semantics of the indefinite determiner $\varnothing/a$ is in this case.

If the semantics of the indefinite determiner in manner adverb(ial)s is taken to be $\underline{\lambda Q \lambda P.\exists m\ [P(m) \wedge Q(m)]}$, which is the version of the standard semantics of *a* defined for manners rather than individuals (see, e.g., Partee, 1986), the DP in their structure will be of type $\langle mt, t\rangle$. Therefore, it will not be able to combine with P (of type $\langle m, vt\rangle$, cf. (3.55)) by means of the assumed semantic composition rules to be interpreted in situ, but, instead, will have to undergo Quantifier Raising to a position of type t,

[48] In this sense, P in manner adverb(ial)s has an analogous function as prepositions in other verb-modifying PPs that introduce optional θ-roles, such as, e.g., the instrumental *with*, which may plausibly be analyzed as denoting $\lambda x \lambda e.\mathbf{instrument}(x)(e)$.

[49] Overtly prepositional manner adverbials can sometimes also contain non-indefinite determiners, such as, for instance, *the* and *every*, as in the following examples from the web:

(i) a. So he packed his one bag in **the** careful way he'd learned from his mother the first time he ever left home overnight.
b. I've tried wrapping headphones in **every** careful way possible.

However, none of the corresponding interpretations (i.e., in terms of uniqueness and universal quantification) is available to *–ly* manner adverbs. This lack of interpretative variability is possibly due to the fact that the determiner in their structure is null.

i.e., to TP under the assumptions made in this thesis, see the discussion in section 1.3.1. This implies that the manner quantifier will have scope over the event quantifier introduced by the Asp head (see section 1.3.1); however, the opposite scope relation appears to be more adequate, which can be seen when the event quantifier has universal force.[50] Hence, in order for the manner quantifier to be in the scope of the event quantifier, I will assume the indefinite determiner inside manner adverb(ial)s to have the semantics in (3.56), which makes QR to TP unnecessary and in fact impossible (cf., e.g., Ferreira (2005, 23) and Nakanishi (2007, 266) for an analogous semantics for the universal and the existential quantifier over individuals, respectively; see also Elbourne (2005)):

(3.56) $\llbracket \mathrm{D} \rrbracket = \lambda Q_{\langle m,t\rangle} \lambda P_{\langle m,vt\rangle} \lambda e.\exists m\ [P(m)(e) \wedge Q(m)]$

Accordingly, the DP in the structure of manner adverb(ial)s is of type $\langle\langle m, vt\rangle, vt\rangle$ and thus may be interpreted in situ being combined with P by Functional Application.[51] Specifically the DP in (3.50) above receives the denotation in (3.57):

(3.57) $\llbracket \mathrm{DP} \rrbracket = \lambda P_{\langle m,vt\rangle} \lambda e.\exists m\ [P(m)(e) \wedge \mathbf{manner}(m) \wedge \exists d\ [\mathbf{careful}(d)(m) \wedge d \geqslant \mathbf{d}_s]]$

[50] For example, a plausible interpretation of the sentence below, which contains the universal quantificational adverb *always*, is that for every event of John's driving there is a manner, which may be different from event to event, but is careful in every case, and not that there is a single manner which holds for all events of John's driving.

(i) John always drives carefully/in a careful way. $[\forall e > \exists m,\ \#\exists m > \forall e]$

However, see F. Landman (2000), who assumes specifically for the *existential* event quantifier that it takes the lowest scope with respect to other quantifiers. If true, this can be accounted for also without resorting to Quantifier Raising to TP, for instance, by assuming an existential quantifier over sub-events to be present inside the nuclear scope of the individual/manner quantifier, as is done, e.g., in Elbourne (2005, 51) and Ferreira (2005, 21–23). Finally, it should be noted that nothing crucial for the general lines of the analysis put forth in this section hinges on the choice of the semantics of D in (3.56). An analysis along these lines can also be implemented under the assumption that the quantificational DP inside manner adverb(ial)s is of type $\langle mt, t\rangle$ (and so undergoes QR to TP), if this assumption is preferable for some independent reasons.

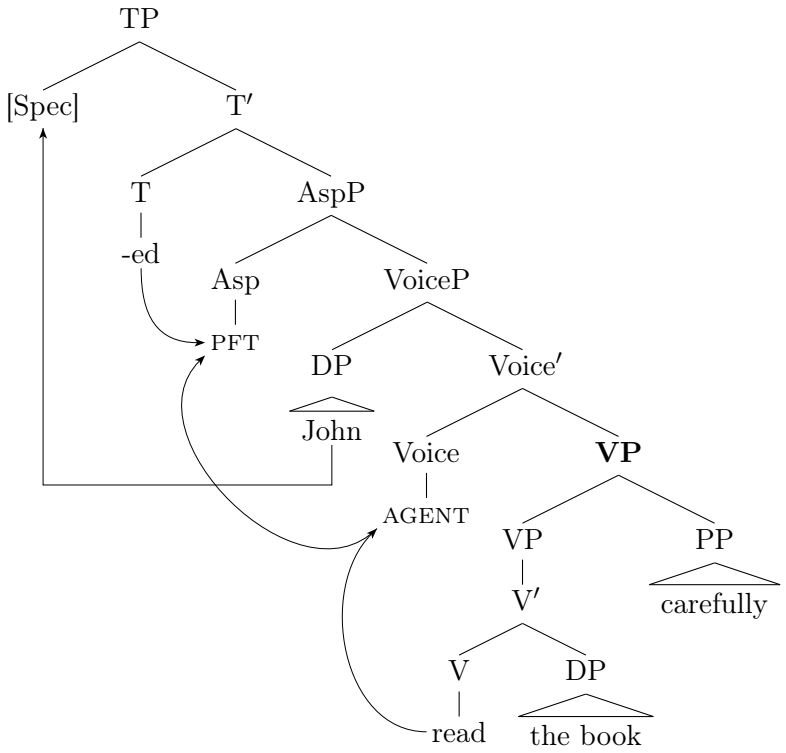
[51] QR to TP is impossible with quantificational DPs of this type, as the event argument is already closed off at the level of TP. However, alternatively to being interpreted in situ, they may also be quantifier-raised to VP or VoiceP, if this is necessary to account for their scope relations with other VP/VoiceP-internal quantificational DPs. See Heim & Kratzer (1998, §§ 8.3–8.4) and references therein, as well as Fox (2000), for a discussion of the possibility of QR to VP, however, not within event semantics.

Hence, given the semantics of P in (3.55), the denotation of the entire PP *carefully/in a careful way* is as below.

(3.58) $[\![\text{PP}]\!] = \lambda e.\exists m\ [\mathbf{manner}(m)(e) \wedge \mathbf{manner}(m) \wedge \exists d\ [\mathbf{careful}(d)(m) \wedge d \geqslant \mathbf{d}_s]]$

Let us now see how such semantics of manner adverbs enters the semantic composition of a sentence. In accordance with the assumptions in section 1.3.1 concerning the syntax of active sentences and assuming that post-verbal manner adverbs are generated as right adjuncts to VP[52], the structure of an active sentence containing a manner adverb, such as that in (3.59), is as follows.[53]

(3.59) John read the book carefully.



[52]This assumption anticipates the discussion in section 3.3 below, which deals with the syntax of manner adverbs.

[53]V raises to Asp (via Voice), T lowers to Asp, and the subject moves to [Spec,TP], which yields the surface word order. However, in what follows, they will for simplicity be interpreted in their unmoved positions.

Since both the manner PP and the VP it adjoins to denote properties of events, type $\langle v,t\rangle$, cf. (3.58) and (3.60), they combine semantically by Predicate Modification, which was defined in section 1.3.3 for two sister constituents of type $\langle \varepsilon,t\rangle$. The result of this composition is in (3.61).

(3.60) a. $[\![\text{read}]\!] = \lambda x\lambda e.\mathbf{read}(x)(e)$
b. $[\![\text{the book}]\!] = \iota x.\mathbf{book}(x)$
c. $[\![\text{VP}]\!] = \lambda e.\mathbf{read}(\iota x.\mathbf{book}(x))(e)$

(3.61) $[\![\mathbf{VP}]\!] = \lambda e\ [\mathbf{read}(\iota x.\mathbf{book}(x))(e) \wedge \exists m\ [\mathbf{manner}(m)(e) \wedge \mathbf{manner}(m) \wedge \exists d\ [\mathbf{careful}(d)(m) \wedge d \geqslant \mathbf{d}_s]]]$

Given the semantics of AGENT, PFT, and *–ed*/PAST from section 1.3.1 repeated for convenience in (3.62), the semantic derivation of (3.59) proceeds as shown in (3.63)–(3.66) below.

(3.62) a. $[\![\text{AGENT}]\!] = \lambda P_{\langle v,t\rangle}\lambda x\lambda e\ [P(e) \wedge \mathbf{agent}(x)(e)]$
b. $[\![\text{PFT}]\!] = \lambda P_{\langle v,t\rangle}\lambda t.\exists e\ [P(e) \wedge \tau(e) \subseteq t]$
c. $[\![\text{-ed}]\!] = \lambda P_{\langle i,t\rangle}.\exists t\ [P(t) \wedge t \prec \mathbf{now}]$

(3.63) $[\![\text{Voice}']\!] = \lambda y\lambda e\ [\mathbf{read}(\iota x.\mathbf{book}(x))(e) \wedge \exists m\ [\mathbf{manner}(m)(e) \wedge \mathbf{manner}(m) \wedge \exists d\ [\mathbf{careful}(d)(m) \wedge d \geqslant \mathbf{d}_s]] \wedge \mathbf{agent}(y)(e)]$

(3.64) $[\![\text{VoiceP}]\!] = \lambda e\ [\mathbf{read}(\iota x.\mathbf{book}(x))(e) \wedge \exists m\ [\mathbf{manner}(m)(e) \wedge \mathbf{manner}(m) \wedge \exists d\ [\mathbf{careful}(d)(m) \wedge d \geqslant \mathbf{d}_s]] \wedge \mathbf{agent}(\mathbf{john})(e)]$

(3.65) $[\![\text{AspP}]\!] = \lambda t.\exists e\ [\mathbf{read}(\iota x.\mathbf{book}(x))(e) \wedge \exists m\ [\mathbf{manner}(m)(e) \wedge \mathbf{manner}(m) \wedge \exists d\ [\mathbf{careful}(d)(m) \wedge d \geqslant \mathbf{d}_s]] \wedge \mathbf{agent}(\mathbf{john})(e) \wedge \tau(e) \subseteq t]$

(3.66) $[\![\text{TP}]\!] = \exists t\ [\exists e\ [\mathbf{read}(\iota x.\mathbf{book}(x))(e) \wedge \exists m\ [\mathbf{manner}(m)(e) \wedge \mathbf{manner}(m) \wedge \exists d\ [\mathbf{careful}(d)(m) \wedge d \geqslant \mathbf{d}_s]] \wedge \mathbf{agent}(\mathbf{john})(e) \wedge \tau(e) \subseteq t] \wedge t \prec \mathbf{now}]$

Summing up, the analysis of manner adverbs presented above implies that they denote properties of events, cf. (3.58), as is also standardly assumed in event semantics. However, in accordance with the conclusions of section 2.3, their semantics is taken to be more complex than in standard event semantics and to involve quantification over manners. In this way, the proposed semantics of manner adverbs is similar to the one suggested by M. Schäfer (2008) in an earlier manner-based analysis, cf. (2.76), but, unlike the latter, it is derived compositionally from the morphosyntactic

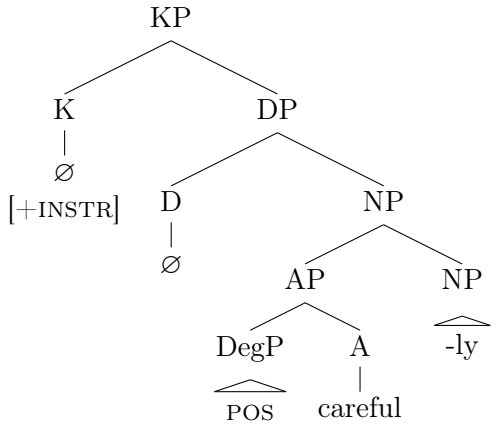
structure of manner adverbs as PPs, which has been argued for in section 3.1.2 on independent grounds.

As discussed in section 3.1.2.2, the next section will compare the analysis of manner adverbs presented above to the KP version of it, which is closer to Déchaine & Tremblay's (1996) original proposal.

3.2.2 Functional projection

On Déchaine & Tremblay's (1996) analysis, *–ly* adverbs contain a semantically empty K head, cf. (3.38), rather than a semantically non-vacuous P head, as assumed in this thesis. Taking into account the considerations in section 3.1.2.2 that *–ly* adverbs are maximal projections and that they contain a DP layer, the morphosyntactic structure of manner *–ly* adverbs on their analysis as KPs looks as in (3.67), differing from their structure under the PP analysis (cf. (3.50)) only with respect to the K head.[54]

(3.67)



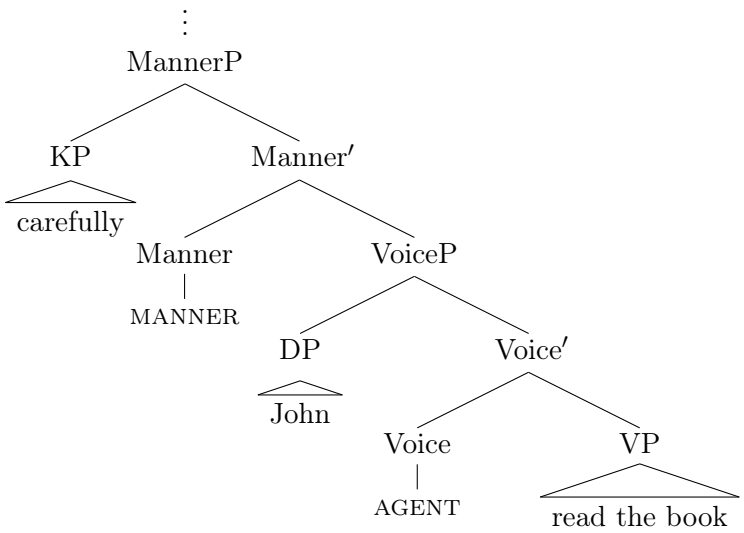
If manner adverbs are KPs, i.e., Case-marked elements[55], some category must θ-mark them and assign them Case—most plausibly, the verb. Thus, manner adverbs may be assumed to be optionally expressed arguments of (some) verbs, rather than adjuncts, as commonly believed (see, e.g., Baker, 2003, 235–236, for a discussion of this possibility).

[54] This approach may also be extended to manner adverbials of the form *in a(n) A way* by analyzing *in* as a functional, Case-checking preposition, rather than a lexical one.

[55] In particular, they may be assumed to be marked for instrumental/ablative Case, as suggested by the fact that *mente* in Latin is an ablative form, as already mentioned above, and the counterparts of *in a(n) A manner* adverbials in some morphologically rich languages, such as, for instance, Russian, are marked for instrumental.

An analysis along these lines was put forward in Alexeyenko (2012b), where it was suggested in particular that a special functional head in the extended projection of V, *Manner*, licenses manner adverbs in its specifier position.[56] It was furthermore argued that MannerP is located on top of VoiceP in active sentences, such that the structure of the lower verbal domain is as shown below for the same sentence as in section 3.2.1 before, cf. (3.59).[57]

(3.68) John read the book carefully.



Thus, on this analysis, the manner θ-role is introduced by Manner in an analogous way as the agent θ-role is introduced by Voice. Accordingly, Manner has in its semantics the manner function which relates manners to events, cf. (3.69) below, thus taking over the semantic contribution of P from the analysis presented in the previous section, cf. (3.55).[58]

[56] Thus, manner adverbs are introduced on this approach in an architecturally analogous way to how some other arguments have been proposed to be introduced, such as the external argument, which is licensed by v/Voice according to Chomsky (1995) and Kratzer (1996), or the benefactive argument, which is licensed by Appl in Pylkkänen (2002). See also Cinque (1999), who suggests that adverbs of various semantic classes are introduced as specifiers of various dedicated functional projections of the clause.

[57] AspP and TP, which are supposed to be located on top of MannerP, are left out in the structure in (3.68) to make it more compact.

[58] Unlike the semantics of the P head in (3.55), the semantics of Manner in (3.69) is of a higher order, such that it can be combined with VoiceP by Functional Application without having to introduce a special composition rule in the spirit of Kratzer's (1996) Event Identification to combine expressions of type $\langle m, vt\rangle$ and $\langle v, t\rangle$, see section 1.3.1.

(3.69) $[\![\text{MANNER}]\!] = \lambda P_{\langle v,t\rangle}\lambda m\lambda e\ [P(e) \wedge \mathbf{manner}(m)(e)]$

The compositional semantics of manner adverbs under the KP analysis in (3.67) is identical with their compositional semantics under the PP analysis in (3.50) up to the level of DP, whose denotation is repeated below for convenience.[59] Furthermore, the denotation of the entire KP is in fact the same, since K is supposed to be semantically empty (an identity function), merely bearing the Case feature [+INSTR].

(3.70) $[\![\text{DP}]\!] = [\![\text{KP}]\!] = \lambda P_{\langle m,vt\rangle}\lambda e.\exists m\ [P(m)(e) \wedge \mathbf{manner}(m) \wedge \exists d\ [\mathbf{careful}(d)(m) \wedge d \geqslant \mathbf{d}_s]]$

The semantic derivation of the structure fragment in (3.68) proceeds, accordingly, as follows:

(3.71) $[\![\text{VP}]\!] = \lambda e.\mathbf{read}(\iota x.\mathbf{book}(x))(e)$

(3.72) $[\![\text{Voice}']\!] = \lambda y\lambda e\ [\mathbf{read}(\iota x.\mathbf{book}(x))(e) \wedge \mathbf{agent}(y)(e)]$

(3.73) $[\![\text{VoiceP}]\!] = \lambda e\ [\mathbf{read}(\iota x.\mathbf{book}(x))(e) \wedge \mathbf{agent}(\mathbf{john})(e)]$

(3.74) $[\![\text{Manner}']\!] = \lambda m\lambda e\ [\mathbf{read}(\iota x.\mathbf{book}(x))(e) \wedge \mathbf{agent}(\mathbf{john})(e) \wedge \mathbf{manner}(m)(e)]$

(3.75) $[\![\text{MannerP}]\!] = \lambda e.\exists m\ [\mathbf{read}(\iota x.\mathbf{book}(x))(e) \wedge \mathbf{agent}(\mathbf{john})(e) \wedge \mathbf{manner}(m)(e) \wedge \mathbf{manner}(m) \wedge \exists d\ [\mathbf{careful}(d)(m) \wedge d \geqslant \mathbf{d}_s]]$

Further, given the semantics of PFT and *–ed* from (3.62), which head AspP and TP that are supposed to be on top of MannerP in the structure in (3.68), the denotation of the entire sentence is as below.

(3.76) $[\![\text{TP}]\!] = \exists t\ [\exists e\ [\exists m\ [\mathbf{read}(\iota x.\mathbf{book}(x))(e) \wedge \mathbf{agent}(\mathbf{john})(e) \wedge \mathbf{manner}(m)(e) \wedge \mathbf{manner}(m) \wedge \exists d\ [\mathbf{careful}(d)(m) \wedge d \geqslant \mathbf{d}_s]] \wedge \tau(e) \subseteq t] \wedge t \prec \mathbf{now}]$

Thus, the MannerP analysis presented in this section yields the same semantics for sentences containing manner adverbs as the PP analysis in the previous section, cf. (3.66) and (3.76). However, the latter approach has some advantages over the former one.

[59] The KP denotation in (3.70) differs from the one suggested in Alexeyenko (2012b) insofar as the semantics of gradability is added and KP is of type $\langle\langle m, vt\rangle, vt\rangle$, rather than $\langle mt, t\rangle$, such that it can be interpreted in situ in [Spec,MannerP] without having to undergo QR to TP. These modifications have been made in order to make the KP analysis more easily comparable with the PP analysis from the previous section.

First, the MannerP analysis implies that there is one null head more to argue for, whereas the PP analysis attributes its function to a different head, which both approaches assume anyhow.

Second, the PP analysis accounts in a more natural way for the *optionality* of manner adverb(ial)s than the MannerP analysis, as the latter implies that MannerP is always present in the syntactic structure. Thus, in the absence of an overt manner adverb(ial), a null pronoun of type m referring to a contextually given manner has to appear in [Spec,MannerP] for the semantic derivation to proceed. This may seem to be appropriate in view of the intuition that non-stative eventualities unfold in time in a certain way even when no explicit manner is specified.[60] Yet the MannerP analysis implies that implicit manners are present *syntactically* as silent pronouns and not just at some level of *semantic* interpretation; therefore, they should also be syntactically active. However, standard tests for syntactic activeness of implicit arguments, such as the ability to control and bind, are difficult to apply to manner arguments.[61] Hence, as long as the evidence for the syntactic presence of silent manner pronouns is missing, the PP analysis, which does not presuppose their presence, is more adequate in this respect than the MannerP analysis.

Third, the PP analysis is more economical in capturing the possible positions of manner adverbs than the MannerP analysis. As will be discussed in more detail in section 3.3.1 below, English manner adverbs can be placed either pre-verbally or post-verbally—in the latter case, also following the direct object, if it is present, cf. (3.77). The analysis of manner

[60] This intuition has been expressed by Dik, who assumed that all non-stative eventualities "have an implicit manner in which they are carried out or go on" (Dik, 1975, 117), which is reflected in his redundancy rule in (2.69) discussed in section 2.3.2. In support of this assumption, he notes that, when describing an event, it does not make much sense to add that it occurred in a certain way without specifying this way or to deny it and gives the following examples (the grammaticality signs as in the original):

(i) a. *John answered the question in a manner.
b. *John answered the question, but not in a manner.
c. *Did John answer the question in a manner or didn't he?

From this Dik concludes that the description of an event establishes the manner of that event as a discourse referent. This does not necessarily imply, however, that this manner is also present *syntactically* as a silent pronoun. In this connection, see Perry (1998); Stanley (2000); Recanati (2002); Cappelen & Lepore (2007), for a discussion concerning the status and the representation of so-called *unarticulated constituents*.

[61] For a general discussion of implicit arguments, see Bhatt & Pancheva (2006). On implicit agents in English, see Manzini (1983); Roeper (1987); Baker et al. (1989); on null objects in Italian, see Rizzi (1986).

adverbs as PPs that are base-generated in the right VP-adjunct position accounts for their post-verbal, or, more precisely, post-object, placement, as we saw in (3.59). Accordingly, only their pre-verbal position needs to be derived (specifically in this thesis, it will be assumed to be derived by movement of manner adverbs to [Spec,AspP], see section 3.3.2). By contrast, the base position of manner adverbs within the MannerP approach, i.e., [Spec,MannerP], does not correspond to either of their two possible surface positions: After the subject DP moves to [Spec,TP] and V raises to Asp, the manner adverb in [Spec,MannerP] ends up between the verb and the direct object, which is generally not a possible position, as (3.78) shows for the structure in (3.68). Thus, under the MannerP analysis, *both* surface positions of manner adverbs have to be derived by movement.[62]

(3.77) a. John carefully read the book.
b. John read the book carefully.

(3.78) *John read carefully the book.

On the other hand, however, the often presumed *non-iterability* of manner adverbs, illustrated in (3.79) by the examples from Costa (1997), speaks in favor of the MannerP analysis, rather than the PP analysis.

(3.79) a. John spoke to his mother nicely *(and) carefully.
b. *John quickly spoke to his mother nicely.
(Costa, 1997, 47–48)

If manner adverbs are analyzed as PP adjuncts to VP, the impossibility to stack them is difficult to explain without some additional assumptions. By contrast, it follows automatically if manner adverbs are analyzed as generated in the unique specifier position of the unique functional projection MannerP.

It should be noted, though, that the non-iterability of manner adverbs is not indisputable. For instance, Ernst (2002) argues against it citing the examples in (3.80) below, which, according to him, are felicitous because they provide pragmatically suitable contexts for the presence of multiple manner adverbs, and the example in (3.81) from Parsons (1970) also dem-

[62] This argument holds under the assumption made in section 1.3.1 that V undergoes head movement to Asp. If, by contrast, V is assumed not to undergo head movement or to move to a lower head, for example, to Voice, the base position of manner adverbs in [Spec,MannerP] on the MannerP analysis will correspond to their pre-verbal placement, and therefore only the post-verbal position will need to be derived. In this case, the MannerP analysis will not be less economical in this respect than the PP analysis.

onstrates the possibility to iterate manner adverbs.[63] Such examples, in turn, are problematic for the MannerP analysis.

(3.80) a. They play quietly well, but get rambunctious when we have more lively games.
b. She runs slowly correctly, but loses her form when she speeds up. (Ernst, 2002, 285)

(3.81) John painstakingly wrote illegibly. (Parsons, 1970, 324)

Thus, the PP analysis of manner adverbs and the corresponding compositional semantics in section 3.2.1 will be preferred over the MannerP analysis for reasons stated above. Having established the syntax–semantics of adverbial manner modification, the next step is to see how manner modification works outside of the adverbial domain when manner adjectives are applied to nouns of various semantic types. This will be undertaken in chapter 4. Before that, however, let us discuss in some more detail the syntax of manner adverbs. Some of the conclusions reached in the next section regarding the syntax of manner adverbs will be relevant for the discussion in section 4.1 concerning the licensing of manner adjectives and adverbs in event nouns and gerunds.

3.3 Syntax of manner adverbs

3.3.1 Positions

The aim of this section is to summarize the main facts regarding the distribution of manner adverbs in English. In view of the relative complexity of the matter, some less central issues will have to be left out of the discussion or mentioned only in passing.

As has already been discussed in the previous section, English manner adverbs occur close to the main verb—either preceding it or following it, which is illustrated below by the examples from Potsdam (1999).

[63] In examples like in (3.80) and (3.81), one manner adverb seems to take *scope* over the other one, as discussed at length in Piñón (2007) and M. Schäfer (2008), and this possibly contributes to why these examples are more acceptable. Like standard event semantics, the version of the manner-based analysis of manner adverbs advocated in this thesis (in section 3.2.1) does not account for such scope-taking manner adverbs. This may possibly be improved by introducing the distinction between complex events and their sub-events into the analysis. However, as has already been stated in section 1.1, the analysis of scope-taking manner adverbs falls outside the scope of the present thesis.

(3.82) a. George won't be *quickly* reading that book.
b. George won't be reading that book *quickly*.
(Potsdam, 1999)

In case *auxiliaries* or/and *modals* are present, manner adverbs in the *pre*-verbal position must be placed immediately before the main verb, as in (3.82a), and not to the left of auxiliaries/modals or in between them, as the following examples show:[64,65]

(3.83) a. *George won't *quickly* be reading that book.
b. *George *quickly* won't be reading that book.
(Potsdam, 1999)

If the *direct object* DP is present, manner adverbs in their *post*-verbal position have to follow it, as in (3.82b) above, rather than appear immediately after the main verb and before the direct object, cf. (3.84).

(3.84) *George won't be reading *quickly* that book.

However, the placement of manner adverbs between the verb and the direct object becomes acceptable if the latter is "heavy", for instance, in virtue of having additional adjuncts, such as the relative clause and the

[64] Potsdam (1999, fn. 2) notes that manner adverbs are sometimes not unacceptable also before the (non-finite) passive auxiliary, as in (i), and not only immediately before the main verb. The possibility of this position will not be considered in what follows.

(i) Bobby will have *handily* been beaten by Billy Jean. (Potsdam, 1999)

[65] The pre-auxiliary position is available to adverbs like *cleverly* (which are ambiguous between a manner and a clausal reading, cf. section 1.1), but not on their manner reading, as the example in (ia) from Cinque (1999, 19) illustrates. Accordingly, "pure" manner adverbs like *quickly* cannot occur in this position at all, cf. (3.83).

(i) a. John *cleverly* has answered their questions. [*MANNER/CLAUSAL]
b. John has answered their questions *cleverly*. [MANNER/*CLAUSAL]

(ii) John (has) *cleverly* answered their questions. [MANNER/CLAUSAL]
a. John has been *cleverly* answering their questions. [MANNER/*CLAUSAL]
b. John has *cleverly* been answering their questions. [*MANNER/CLAUSAL]

Note also that, while the pre-auxiliary and the post-verbal positions allow, respectively, only for the clausal and the manner reading of adverbs like *cleverly*, cf. (i), the position before the main verb allows for both readings if no non-finite auxiliaries are present. This position is thus usually assumed to be ambiguous between the positions before and after the non-finite auxiliary, cf. (ii) from Cinque (1999, 19).

PP in the example below.[66]

(3.85) George won't be reading *quickly* that book on astrophysics you gave him.

Thus, manner adverbs have two basic positions in English—the pre-verbal one and the post-verbal/post-object one—differing in this respect from adverbs of some other semantic classes, such as domain and modal adverbs, for instance, which have a far less restricted distribution:

(3.86) (Psychologically,) this result (psychologically) may (psychologically) signal a change (psychologically). (Ernst, 2002, 4)

(3.87) (Probably,) John (probably) had (probably) read (*probably) the book (probably) to Mary (, probably). (Costa, 1998, 20)

The next question is then whether the semantic contribution of manner adverbs is the same in their two positions. It seems to be the case, as there is no truth-conditional difference between, e.g., (3.82a) and (3.82b), which differ only with respect to the position of the manner adverb. Yet, Thomason & Stalnaker (1973, 200) observed that in some cases sentences containing a pre-verbal and a post-verbal manner adverb, as, for instance, the ones in (3.88) below, do seem to have different truth conditions, since (3.88a) "would be true if he took a long coffee break between each testing, even though he tested each single bulb quickly".[67]

(3.88) a. He has been *slowly* testing some bulbs.
b. He has been testing some bulbs *slowly*. (Cinque, 1999, 20)

Paraphrasing Thomason & Stalnaker's (1973) observation, *slowly* applies to the sum event of testing some bulbs in (3.88a) and to individual testing sub-events in (3.88b). This observation has sometimes been taken as evidence that the interpretations of pre-verbal and post-verbal manner adverbs are not identical, even if this difference does not surface in many

[66] A complement can also be heavy, e.g., in virtue of being a CP, cf. (i) from Johnson (1991), who shows that manner adverbs may occur to the left of non-DP complements:

(i) Sam said *suddenly* that we must all leave. (Johnson, 1991)

[67] The original examples from Thomason & Stalnaker (1973) have been modified in (3.88) following Cinque (1999, 20), such that they contain a non-finite auxiliary. The reason for this is that the placement of *slowly* to the right of the auxiliary in (3.88a) excludes the possibility that it is interpreted clausally in this case, cf. fn. 65 above.

contexts (cf. Cinque, 1999, 19–20; Delfitto, 2006, 98–99). The availability of two truth-conditionally distinct readings in (3.88) does not necessarily imply, however, that manner adverbs have different interpretations in the two positions, because it can also be accounted for in terms of alternative scope relations, as was in fact assumed by Thomason & Stalnaker (1973) themselves and further argued by Ernst (2002, 494, fn. 19).

In order to spell out somewhat more formally how the interpretative difference in (3.88) may be analyzed as a matter of scope, let us assume, first, that quantificational DPs such as *some bulbs* are of type $\langle\langle e, vt\rangle, vt\rangle$ and, hence, either are interpreted in situ or undergo quantifier raising to VP or VoiceP (see section 3.2.1), and, second, that determiners like *some* in *some bulbs* introduce individual quantifiers whose nuclear scope hosts an existential quantifier over sub-events (as, e.g., in Elbourne, 2005, 51; Ferreira, 2005, 23). Accordingly, the semantics of the VP *test some bulbs slowly*, in which *slowly* right-adjoins to a lower VP as in (3.59), will be as in (3.89a) if *some bulbs* remains in situ (and thus in the scope of *slowly*) and as in (3.89b) if it undergoes QR to adjoin to VP above *slowly*.[68,69]

(3.89) a. $\lambda e.\exists \mathcal{X}\ [\mathbf{bulbs}(\mathcal{X}) \wedge \forall x\ [x \leqslant \mathcal{X} \rightarrow \exists e'\ [e' \leqslant e \wedge \mathbf{test}(x)(e')]]$
$\wedge\ \exists m\ [\mathbf{manner}(m)(\underline{e}) \wedge \mathbf{manner}(m) \wedge \mathbf{slow}(m)]]$

b. $\lambda e.\exists \mathcal{X}\ [\mathbf{bulbs}(\mathcal{X}) \wedge \overline{\forall x}\ [x \leqslant \mathcal{X} \rightarrow \exists e'\ [e' \leqslant e \wedge \mathbf{test}(x)(e')$
$\wedge\ \exists m\ [\mathbf{manner}(m)(\underline{e'}) \wedge \mathbf{manner}(m) \wedge \mathbf{slow}(m)]]]]$

Thus, (3.89a) represents the reading on which the sum event of testing some bulbs is slow, while (3.89b)—the one on which its sub-events of testing individual bulbs are slow. The difference between these two readings is captured in virtue of the fact that *some bulbs* can have alternative LF-positions—and, hence, scope relations—with respect to *slowly*, while the semantic contribution of the latter is kept constant across positions.[70]

In light of these considerations, I will, thus, assume that manner adverbs have the same semantic contribution in their pre- and post-verbal positions. These positions differ, however, in some other respects.

[68] In fact, also the DP in the structure of *slowly* can undergo QR, see section 3.2.1.

[69] The semantics of gradability is left out in (3.89) to avoid unnecessary complexity.

[70] Since the analysis sketched above attributes the interpretative difference in (3.88) to alternative LF-positions of *some bulbs* and not to the pre- vs. post-verbal placement of *slowly*, both (3.88a) and (3.88b) should have both readings. Yet (3.88a) is commonly assumed to have only the reading in (3.89a), and (3.88b)—only that in (3.89b). If true, the unavailability of the other readings needs to be accounted for in some independent way. But at least for some native speakers both sentences have both readings, even if (3.88a) is more naturally interpreted as in (3.89a), and (3.88b)—as in (3.89b).

One sort of asymmetry between these two positions was observed by Jackendoff (1977); the relevant examples, which have already been cited in (3.39) in section 3.1.2.2, are repeated below for convenience.

(3.90) a. Bill dropped the bananas $\left\{\begin{matrix}\text{quickly}\\ \text{with a crash}\end{matrix}\right\}$.

b. Bill $\left\{\begin{matrix}\text{quickly}\\ \text{*with a crash}\end{matrix}\right\}$ dropped the bananas.

(Jackendoff, 1977, 73)

These data seem to show that the pre-verbal position is more restrictive with respect to the type of manner modifiers it allows than the post-verbal one: While *–ly* manner adverbs may appear both pre-verbally and post-verbally, overtly prepositional manner adverbials seem to be allowed only in the post-verbal position.

However, examples like the one in (3.91) from the COCA demonstrate that the pre-verbal position is in fact restricted to "light" adverb(ial)s and not to *–ly* adverbs, which means that the relevant factor for the contrast in (3.90) is the *relative weight* of manner modifiers, and not their *type*.[71] Overtly prepositional adverbials are heavier than their *–ly* counterparts, which accounts for the data in (3.90). But they become acceptable in the pre-verbal position if they are light compared to the rest of the sentence, like in the example in (3.91), in which the adverbial would have to follow a heavy direct object with a relative clause if not placed pre-verbally.[72]

(3.91) He listened to everything everybody said and [...] didn't speak, just waited. And then at the end, he took his glasses off and **in a masterful way** reviewed everything that was said in the whole day.

Furthermore, Ernst (2002, 231) shows that not only (overtly) prepositional manner adverbials, but in fact also *–ly* manner adverbs can become less acceptable in the pre-verbal position if they are heavier than the rest of the VP, for instance, because of additional modifiers, as in (3.92a). But if a *–ly* manner adverb is lighter than the rest of the sentence in spite of the presence of modifiers, like in (3.92c), the pre-verbal position becomes

[71] The examples in (3.91) and (3.92) also demonstrate that the relevant factor here is not the *(non-)head-finalness* of manner adverb(ial)s either, as assumed, for instance, by Baker (2003, 235, fn. 30), Escribano (2004), Haider (2004); see also fn. 25 in section 1.3.3. Yet, like also the type of manner modifiers, it clearly correlates with weight.

[72] Ernst (2002, 173) cites similar examples with adverbials of other semantic classes.

more natural for it again.[73]

(3.92) a. ?Lou had extremely quickly arrived.
b. Lou had arrived extremely quickly.
c. Lou had extremely quickly devised a new way to get the products to market. (Ernst, 2002, 231)

Another difference between the pre-verbal and the post-verbal position of manner adverbs can be illustrated by the following examples from Jackendoff (1972):

(3.93) a. John worded the letter carefully.
b. *John worded the letter.
c. *John carefully worded the letter.

(3.94) a. Steve dresses elegantly.
b. *Steve dresses.
c. *Steve elegantly dresses. (Jackendoff, 1972, 64–65)

Ernst (2002, 272–273) argues that, while the post-verbal position conveys *foregrounded* information, the pre-verbal position is associated with the *backgrounding* of information and that this explains why the adverbs in the examples above have to be used post-verbally. In particular, verbs like *word* and *dress* have been suggested to be insufficiently informative by themselves, at least in neutral contexts with default presuppositions,

[73] Another type of manner adverbs that is generally not permitted in the pre-verbal position are short *–ly*-less adverbs, such as *fast*, *hard*, and *well*, and synthetic *–ly*-less comparatives/superlatives of *–ly* adverbs (cf. Sugioka & Lehr, 1983; Zwicky, 1995):

(i) a. We will finish the task rapidly/fast.
b. We will rapidly/*fast finish the task.

(ii) a. We ate quicker/more quickly.
b. It was *quicker/more quickly eaten. (Zwicky, 1995, 529)

Ernst (2002, 274) assumes that the reason why these adverbs have to be placed post-verbally is because they are intrinsically (lexically) marked as heavy. This assumption seems to be supported by the fact that they become acceptable in the pre-verbal position when the rest of the VP is heavy, as in the following example from the BNC:

(iii) Some 1800 million years ago atmospheric oxygen was **fast** approaching the present level of about 21 per cent of the total. [BNC: C9A 402]

Yet it is not clear why *–ly*-less adverbs should be intrinsically heavy. This issue will not be investigated any further in this thesis, though.

cf. (3.93b) and (3.94b), which explains why they obligatorily require additional modifiers (cf., e.g., Goldberg & Ackerman, 2001). Obviously, the information conveyed by a modifier must be foregrounded in order to be able to make a useful contribution in the context of such verbs. Thus, if the pre- and post-verbal positions of manner adverbs are associated with back- and foregrounding, respectively, (3.93c) and (3.94c) are infelicitous because the pre-verbal adverbs they contain fail to provide the necessary informativeness, unlike their post-verbal counterparts in the examples in (3.93a) and (3.94a).[74]

Furthermore, such data as in (3.95) from Shaer (2003, 229) may also be used to support the assumption that post-verbal manner adverbs are foregrounded, whereas pre-verbal ones are backgrounded, for a plausible discourse continuation would be about the loudness in (3.95a), but about the proclamation in (3.95b).

(3.95) a. The prisoner proclaimed his innocence *loudly.*
  i. He woke up all the other prisoners.
  ii. #He really believed that he had been framed.
 b. The prisoner *loudly* proclaimed his innocence.
  i. #He woke up all the other prisoners.
  ii. He really believed that he had been framed.

[74] For a related discussion in terms of *(non-)restrictivity*, rather than fore- and backgrounding, see, e.g., Peterson (1997); Shaer (2000, 2003); Morzycki (2008). While the post-gerundive adverb in the example in (ia) from Peterson (1997, 233, 283) may only be interpreted restrictively, as argued by Shaer, its pre-gerundive counterpart in (ib) seems to have only a non-restrictive reading:

(i) a. The Titanic('s) sinking *rapidly* caused great loss of life.
  ∼ The rapidity of the Titanic's sinking caused great loss of life.
  ≁ The Titanic's sinking, which was rapid, caused great loss of life.
 b. The Titanic('s) *rapidly* sinking caused great loss of life.
  ?≁ The rapidity of the Titanic's sinking caused great loss of life.
  ∼ The Titanic's sinking, which was rapid, caused great loss of life.

(ii) a. It is regrettable that the Titanic sank *slowly.*
 b. It is regrettable that the Titanic *slowly* sank. (Morzycki, 2008, 105)

Manner adverbs in (i) modify gerunds (see section 4.1.3 for some further discussion), but the same pattern with respect to (non-)restrictivity holds for manner adverbs that modify verbs as well, as can be seen in (ii) from Morzycki (2008). While (iib) expresses regret about the fact that the Titanic sank, in (iia) it is regretted that it did not sink faster. Note, however, that Morzycki (2008) considers pre-verbal manner adverbs, like in (ib) and (iib), to be ambiguous between a restrictive and a non-restrictive reading. Yet at least some of my informants found them unambiguous as described above.

Let us sum up. Manner adverbs can appear in two positions in English: the pre-verbal and the post-verbal/post-object one. These positions are not associated with a truth-conditional difference; however, pre- and post-verbal manner adverbs differ information-structurally and in terms of weight. While light adverbs and those conveying backgrounded information are normally placed pre-verbally, post-verbal adverbs are usually heavy and convey foregrounded information. The section below presents an analysis of manner adverb placement that captures these data.

3.3.2 Analysis

In the last section, we saw that manner adverbs have two basic positions in English. Let us consider their post-verbal/post-object placement first and determine the range of syntactic positions which may correspond to this placement.

Recall that manner adverbs are analyzed as expressions of type $\langle v, t\rangle$ in this thesis (see section 3.2.1). Hence, given my assumptions about the syntax of the lower verbal domain (section 1.3.1), positions of manner adverbs which yield the MAIN VERB—DIRECT OBJECT—MANNER ADVERB order and in which manner adverbs can combine semantically with their sister constituent by means of the defined composition rules include: (a) the right VP-adjunct position, (b) the right VoiceP-adjunct position, and (c) the complement position of VP. Following a more traditional conception, I assume that post-verbal manner adverbs are right adjuncts to VP, as already implemented in section 3.2.1, although nothing crucial hinges on this choice, and the other options could be adopted under the present assumptions as well.[75]

Let us now see why the set of possible positions for post-verbal manner adverbs is restricted to those listed above. Any positions higher than

[75] For analyses of post-verbal manner adverbs as (optional) verb complements, see, e.g., McConnell-Ginet (1982) and Alexiadou (1997). The latter rejects the analysis in terms of right-adjunction for linearization reasons following Kayne's (1994) Antisymmetry Theory. Note that adopting the complement analysis implies that the denotations of verbs that take a manner adverb as a complement need to be amended such that they contain an additional argument ranging over properties of events.

For analyses of manner adverbs, specifically, of *agent-oriented* manner adverbs like *carefully*, in terms of Voice′-adjunction, see, e.g., Anagnostopoulou (2003); Alexiadou & Anagnostopoulou (2008). In fact, it might be the case that not all manner adverbs are adjuncts to VP, as assumed in this thesis, but some, such as, e.g., agent-oriented manner adverbs, are adjuncts to VoiceP or Voice′. However, differences between various sub-types of manner adverbs are outside the scope of this thesis, see the discussion in section 1.1.

VoiceP are ruled out for reasons of semantic type composition, since the event argument is closed off by Asp, while manner adverbs denote properties of events. Further, other positions within VoiceP than those specified above, namely, *left*-adjunction to VP and VoiceP and the [Spec,VP] position[76], do not produce the desired placement of manner adverbs, but yield the order MAIN VERB—MANNER ADVERB—DIRECT OBJECT.

There are two interrelated questions in this connection: How can left-adjunction of manner adverbs to VP and to VoiceP be prohibited if their right-adjunction is allowed, and how is the order MAIN VERB—MANNER ADVERB—DIRECT OBJECT generated, which, as we saw in section 3.3.1, *is* possible under certain circumstances, namely, in cases when the direct object is heavy, cf. (3.85).

On the one hand, it may be assumed that left-adjunction of manner adverbs to VP and VoiceP is indeed impossible, being disallowed by the *head-final constraint* on pre-modifiers (cf. Emonds, 1976; Williams, 1982; Escribano, 2004; see also the discussion in sections 1.3.3 and 3.1.2.3), as both *–ly* manner adverbs and their overtly prepositional counterparts are analyzed as (non-head-final) PPs in this thesis. In this case, the sequence MAIN VERB—MANNER ADVERB—DIRECT OBJECT might be derived, for instance, by *Heavy Shift*, a weight-motivated rightward movement, which will place the heavy direct object behind the (right-adjoining) adverb to ensure an optimal PF-representation (cf. Ernst, 2002, § 5.4; see also Ross, 1967; Rochemont & Culicover, 1990; Pesetsky, 1995).

On the other hand, *–ly* manner adverbs might be assumed to escape the head-final constraint, for instance, because they are single word units (see, e.g., Baker, 2003, 235, fn. 30; Escribano, 2004, 4–5).[77] Accordingly, *–ly* manner adverbs—but not PP manner adverbials—will be allowed to left-adjoin to VP and VoiceP, and this will yield the configuration MAIN VERB—MANNER ADVERB—DIRECT OBJECT. However, in this case, their left-adjunction will need to be constrained in some way to apply only in cases when the direct object is heavy.

Yet examples like the one in (3.96) from the COCA show that in fact also overtly prepositional manner adverbials may be placed between the main verb and a heavy complement, in this case, a CP. Unlike *–ly* manner adverbs, they may not be assumed to escape the head-final constraint in

[76] Under the present assumptions, the direct object gets assigned Case in [Spec,VP]; however, other positions for it to check Case are possible as well (cf. section 1.3.1).

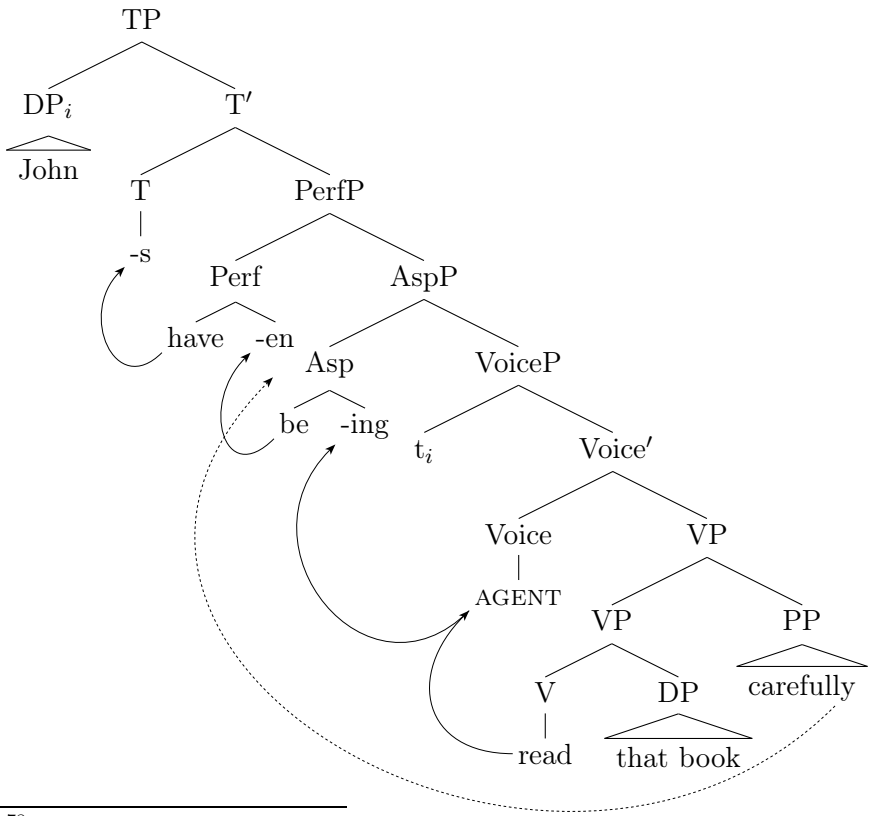
[77] Recall that non-head-final PPs forming single word units may serve as pre-nominal modifiers (cf. examples like *an up-to-date bibliography* in fn. 45 in section 3.1.2.3) and the same holds for non-head-final AP modifiers (cf. fn. 20 in section 1.3.3).

virtue of being single word units, though, which means that their placement between the main verb and the direct object cannot correspond to left VP- or VoiceP-adjunction. Therefore, I will adopt the former option here, i.e., that the head-final constraint blocks left-adjunction of manner adverb(ial)s to the verbal projections in question.[78]

(3.96) Ursula has suggested in a business-like way that they might live here.

Let us now turn to the pre-verbal/post-auxiliary placement of manner adverbs. Insofar as the presence of a non-finite auxiliary helps distinguish between several different positions to the left of the main verb, see fn. 65 in section 3.3.1, let us consider a sentence containing multiple auxiliaries, such as the following one:

(3.97) John has been *carefully* reading that book.



[78] However, cf. fn. 61 in section 4.2.2 for a discussion of some further data that seem to suggest that left-adjunction of manner adverbs to VoiceP may indeed be possible.

Under the assumptions about the syntax of sentences containing auxiliaries presented in section 1.3.1, the sentence in (3.97) has the structure given above. In particular, the perfect and the progressive are assumed to introduce separate functional layers PerfP and AspP (cf., e.g., Alexiadou et al., 2003), which are headed by the respective auxiliary–affix combinations. Furthermore, I assume that, in order to get inflections, the lexical verb raises to Asp, *be* raises to Perf, and *have* raises to T.

Within this syntactic configuration, the placement of the manner adverb between the non-finite auxiliary and the lexical verb in (3.97) must correspond to some position located between the Perf and Asp heads, as indicated by the dotted arrow.[79] Given that there are no other functional projections present between PerfP and AspP, this leaves us with two possible positions: the left AspP-*adjunct* position and the *specifier* position of AspP. Since left-adjunction of non-head-final constituents is prohibited by the head-final constraint discussed above, while specifiers, on the other hand, have been argued not to be subject to it (cf., e.g., Escribano, 2004; Haider, 2004), I will assume that pre-verbal manner adverbs occupy the [Spec,AspP] position.[80]

This analysis of the pre-verbal placement of manner adverbs produces the correct word order also in cases in which different or fewer auxiliaries are present, as in (3.98). In particular, assuming that *must*+$\varnothing$ in (3.98a) head the functional projection ModP located between TP and AspP, the adverb in [Spec,AspP] correctly ends up between the non-finite auxiliary and the main verb after the movement of V to Asp, *be* to Mod, and *must* to T. Similarly, the correct placement of the adverb is reached in (3.98b) after V raises to Asp and *be* raises to T and in (3.98c)—after V raises to Asp and T lowers to it, as posited in section 1.3.1. Finally, for (3.98d) it has to be assumed that, while V raises to Asp and *have* raises from Perf

[79] However, if—instead of V-to-Asp movement and auxiliary raising assumed in this thesis—both lexical verbs and auxiliaries are taken to receive inflections in their base positions by affix lowering or feature checking without movement (lexical verbs might also be supposed to raise only to Voice and receive their inflections there), pre-verbal manner adverbs must occupy some position below the Asp head. In this case, it may be, for instance, the left adjunct position to VoiceP/*v*P/PredP, as in Ernst (2002), or the specifier position of some other FP taken to be additionally present below AspP, such as VoiceP in Alexiadou (1997) and Cinque (1999), which is different from VoiceP as assumed in this thesis, or MannerP discussed in section 3.2.2 above (see there also for arguments against the analysis in terms of MannerP).

[80] Note in this connection, however, that it is not clear that the head-final constraint applies to modifiers of functional projections (cf., e.g., Ernst, 2002) and that it applies to non-base-generated modifiers (cf., e.g., Escribano, 2004).

to T, *–en* lowers from Perf to Asp (in an analogous way as T lowers to it in the absence of auxiliaries), since lexical verbs do not move above Asp.

(3.98) a. John must be *carefully* reading that book.
b. John is *carefully* reading that book.
c. John *carefully* read that book.
d. John has *carefully* read that book.

Thus, post-verbal manner adverbs are analyzed as right VP-adjuncts in this thesis, while their pre-verbal counterparts are assumed to occupy the specifier position of AspP. The next question is then whether one of these positions of manner adverbs is derived from the other by movement or both of them are base positions.

It is easy to see that pre-verbal manner adverbs cannot be base-generated in [Spec,AspP] for type-theoretic reasons: Being of type $\langle v, t\rangle$, they may not be combined with Asp′ of type $\langle i, t\rangle$ by the defined composition rules. Hence, the right VP-adjunct position, which yields the post-verbal placement of manner adverbs, has to be their unique base position. This conclusion agrees well with the absence of a truth-conditional difference between the pre- and post-verbal positions of manner adverbs (cf. section 3.3.1), since it implies that a single semantic interpretation is associated with a single syntactic base position in this case.

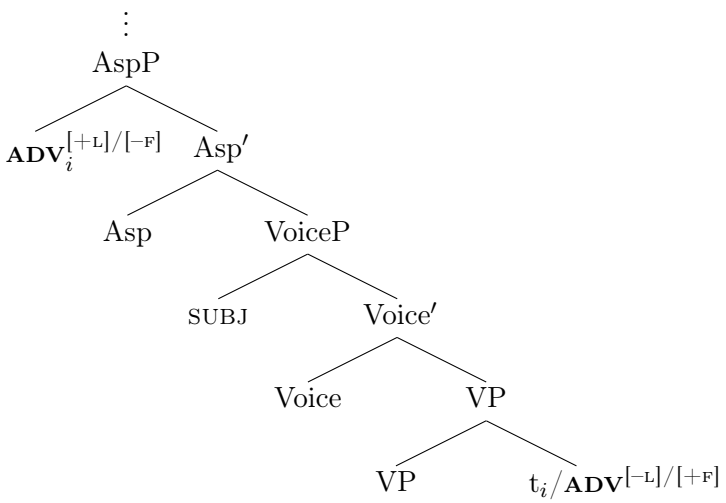
Accordingly, the pre-verbal position has to be derived from the post-verbal one by movement of manner adverbs out of the VP to [Spec,AspP]. Following the conclusions reached in section 3.3.1, I assume that one relevant factor that is behind this movement to a higher specifier position is relative weight: Manner adverbs that are *light*, i.e., that bear the feature [+L], are required to move leftward to produce an optimal PF-representation (cf., e.g., Ernst, 1984, 2002; Alexiadou, 1997; see also Cardinaletti & Starke, 1994). Another factor that triggers leftward movement of manner adverbs is their information-structural status, as *backgrounded / defocused* elements, which are marked [–F], must raise from the lower, focused, position in order for some other constituent to be in focus (cf., e.g., Cinque, 1993, 1999; Zubizarreta, 1998).[81]

Let us sum up. According to the analysis presented above, manner adverbs have a unique base position of right-adjunction to VP, which yields

[81] It is perhaps possible to unify these two factors into a more general one; for example, elements conveying backgrounded information may be considered informationally light. Another possibility is that there is a correlation between these factors. However, these possibilities will not be explored in the present context.

their post-verbal placement, while the pre-verbal placement is derived by movement of [+L]/[–F] manner adverbs from their VP-internal position to the specifier position of AspP. The structure below schematically summarizes these points of the analysis, showing the positions that are available to manner adverbs and the features that distinguish them.

(3.99)



The goal of this chapter has been to provide an analysis of the syntax and semantics of *adverbial* manner modification on the basis of the analysis of the internal structure of manner adverbs as PPs. The next chapter turns to *adjectival* manner modification of event and individual nouns.

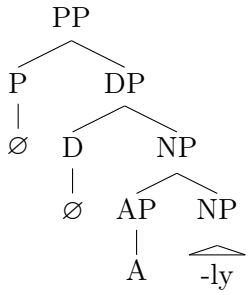
3.4 Summary

This chapter has been concerned with the internal structure, the compositional semantics, and the syntax of manner adverbs. It has been shown that there are reasons to believe that the morpheme *–ly* is in fact neither a derivational nor an inflectional suffix, as usually assumed, but rather a nominal root. Based on this, *–ly* adverbs as a whole have been argued to be null-headed compound PPs rather than members of a separate lexical category or positional variants of a single major category of adverbs and adjectives. The table below summarizes the comparison between the PP analysis of *–ly* adverbs and its competitors with respect to the data discussed in this chapter. While the PP analysis straightforwardly accounts for these data, most of them are problematic or require a separate explanation on either the derivational or the inflectional analysis, or both.

	inflect. analysis	derivat. analysis	PP analysis
are like attributive adjectives w.r.t. complement-taking	−	−	+
permit deletion of *–ly* under coordination	−	−	+
allow degree morphology to attach to the adjective stem	+	−	+
do not allow degree morphology to attach to *–ly*	+	−	+
take the same degree modifiers as adjectives	+	−	+
do not permit further derivation by suffixation	+	−	+
cannot serve as pre-nominal modifiers	+	+	+
can serve as post-nominal modifiers	−	+	+
cannot occur in predicative position	+	+	+

Furthermore, given the proposed PP analysis of *–ly* adverbs, depicted in (3.100) below, the semantics of manner adverbs argued for in chapter 2 becomes compositional. In particular, the manner predicate is introduced by the base adjective, the manner quantifier by the null D head, and the manner function by the null P head.

(3.100)



Finally, concerning the syntax of manner adverbs, it has been argued that they are base-generated as right adjuncts to VP, but can also move to [Spec,AspP] for weight or information-structural reasons, which yields their post-verbal and pre-verbal placement, respectively.

CHAPTER 4

Manner adjectives across noun types

Following the conclusions of chapter 2, manner adjectives are analyzed as properties of manners in this thesis. This analysis yields a straightforward compositional semantics for manner adverbs given that their morphosyntactic structure is as suggested in chapter 3. Specifically, manner adverbs have been argued to be PPs headed by a null preposition that takes as its complement a DP containing the dummy noun *–ly* modified attributively by the base manner adjective. The manner function, which links manners to events, is introduced by the semantics of P on this analysis, while the quantifier over manners is provided by the semantics of the D head.

Outside of the adverbial domain, the analysis of manner adjectives as expressions of type $\langle m, t\rangle$ allows a straightforward semantic composition of attributive manner adjectives with manner nouns (type $\langle m, t\rangle$ as well), as in *careless courage*, and of predicative manner adjectives with DPs that contain manner nouns (i.e., type m or the corresponding quantificational type), as in *The way in which John drives is careless*. Yet, it is not immediately clear how manner adjectives combine semantically with event and individual nouns (type $\langle v, t\rangle$ and $\langle e, t\rangle$), as in *careless driving* and *careless driver*, and DPs containing them. In particular, it is unclear what introduces the manner function and closes the manner variable in the absence of PP structure and, in the case of individual nouns, what contributes the necessary event. The syntax–semantics of adjectival manner modification of such nouns is addressed in turn in sections 4.1 and 4.2 below.

4.1 Event nouns

4.1.1 Licensing of adjectives and adverbs

Let me start the discussion of the syntax and semantics of adjectival manner modification of event nouns by specifying what will be considered an event noun in this thesis. In this regard, I will use the following criteria.

First, among nouns that have an event interpretation, I will consider only *deverbal* event nominalizations, which are formed by means of such suffixes as *–ing*, *–ment*, *–(a)tion*, *–ance/–ence*, *–al*, etc., thus disregarding non-deverbal nouns like *lunch*, *movie*, *trip*, or *war*. The reason for this is the fact that the presence of **verbal** layers in the morphosyntactic structure of event nominalizations implies the presence of an event variable in their semantic structure (namely, the event argument of their base verbs), which is responsible for their event interpretation. By contrast, the origin of the event interpretation of non-deverbal nouns like *lunch* is disputable in the absence of verbal structure. Specifically, it may be argued that such nouns have only one basic reading, namely, their individual reading, and that their event interpretation arises as a result of coercion (triggered by the presence of event modifiers), in the course of which an event is introduced into the logical form (cf., e.g., Asher, 2011; see also the discussion in section 2.2.2.3).

The assumption that non-deverbal nouns that have an event reading differ from deverbal event nominalizations with respect to the presence of an event variable in their basic semantic structure seems to be supported by the following fact. As has already been mentioned in section 3.1.1, VP-adverbs, including manner adverbs, have been shown to be acceptable as *post*-modifiers of deverbal event nominalizations, but not of non-deverbal nouns, which was taken as evidence for the presence of a VP in the morphosyntactic structure of the former (cf. Fu et al., 2001; see also Hazout, 1995a; Kratzer, 1996; Alexiadou, 1997):[1]

(4.1) a. His *transformation* into a werewolf so *rapidly* was unnerving.
b. His *explanation* of the accident *thoroughly* did not help him.
c. The *occurrence* of the accident *suddenly* disqualified her.
d. His *removal* of the evidence *deliberately* resulted in obscuring the case.

[1] All examples in (4.1)–(4.2) are from Fu et al. (2001), except (4.1e) from Jespersen (1940, 109), cited after Kratzer (1996), and (4.2f), which is mine. See also (3.6a) and (3.6b) in section 3.1.1 for examples from Payne et al. (2010) along the lines of (4.1).

e. The *shutting* of the gates *regularly* at ten o'clock had rendered our residence very irksome to me.

(4.2) a. ??His *metamorphosis* into a werewolf so *rapidly* was unnerving.
b. *His *version* of the accident *thoroughly* did not help him.
c. *Kim's *accident suddenly* on the track disqualified her.
d. *the *race* to the mountains *deliberately*
e. *his *trip* to Hawaii *secretly*
f. *my *lunch quickly*

While I also assume the presence of a VP in the structure of deverbal event nominalizations (based, among others, on such facts as their ability to license *do so* anaphora, cf. Fu et al. (2001))[2], their ability to take post-nominal VP-adverbs cannot be used as an argument for it on the analysis of adverbs as PPs advocated in this thesis (see section 3.1.2). This is so because, if adverbs are PPs, they can also right-adjoin to the NP in such nominalizations, given that it is possible semantically. In the case of VP-adverbs, or, more specifically, manner adverbs, it *is* possible semantically since both manner adverbs and deverbal event nominals are of the same type, $\langle v, t\rangle$. Recall that this implication of the analysis of adverbs as PPs is corroborated by the data from Payne et al. (2010) discussed in section 3.1.1, cf. (3.6c) and (3.6d). Payne et al. show that (non-manner) adverbs can post-modify non-deverbal nouns as well, which means that they may only be NP-adjuncts in this case, in the absence of VP as an alternative adjunction site.[3]

By contrast, the inability of non-deverbal nouns with an event reading to take post-nominal manner adverbs, as in (4.2) above, shows under the PP analysis of adverbs that manner adverbs cannot adjoin not only to VP in this case, which indicates its absence in the structure of non-deverbal nominals, but also to NP. Since PP-adjunction to NP is possible syntactically, the latter fact implies that manner adverbs cannot combine with non-deverbal 'event' nouns semantically and, hence, that such nouns are not of type $\langle v, t\rangle$. In other words, the data in (4.2) suggest that an event

[2]Apart from Fu et al. (2001), see Alexiadou (2001b); Alexiadou et al. (2007); Borer (2013) for an overview of arguments for the presence of a VP in deverbal event nouns.

[3]As already mentioned in section 3.1.1 (cf. fn. 7 and 8), adverbs that post-modify non-deverbal nouns in Payne et al.'s examples are mostly domain/frame adverbs, such as *internationally*, and temporal adverbs, such as *recently*. I will have nothing to say in this thesis about how adverbs of these kinds may possibly combine semantically with NPs of various semantic types. But see fn. 77 in section 4.2.4.2 for some considerations on this issue with respect to temporal adverbs.

variable is absent in the semantics of non-deverbal nouns like *lunch* and that their event interpretation arises in some other way, e.g., as a result of coercion, as hypothesized before. For this reason, in what follows only deverbal event nominalizations will be considered as event nouns, i.e., as denoting properties of events.

Second, among deverbal forms interpreted as events, I will consider as *nominalizations* only those that allow modification by *adjectives*, since the possibility of adjectival modification entails the presence of **nominal** layers. This seemingly trivial criterion is particularly relevant in the case of deverbal event nominals because of the existence of another variety of deverbal forms, the so-called *gerunds*, which resemble them in form and are, like them, interpreted as events, but are not nominal, as we will see below based precisely on their inability to take adjectival modifiers.[4] Let us thus take a closer look at what gerunds are.

What is normally understood as gerunds are non-finite deverbal forms derived by means of the suffix *–ing* that exhibit mixed nominal and verbal behavior. Gerunds are not a homogenous class; various sub-types of them differ with respect to which particular nominal and verbal properties they have, as will be discussed in detail in section 4.1.2. The examples below, adapted from Vendler (1967), illustrate several types of gerunds—namely those that have been distinguished by Abney (1987) in his seminal work on *–ing* forms—and, for comparison, also a deverbal event nominalization derived from the same verb by means of *–ing* as well:[5,6]

(4.3) John/Him singing the Marseillaise surprised me. **ACC-*ing***
John's/His singing the Marseillaise caused the riot. **POSS-*ing***
Singing the Marseillaise is fun. **PRO-*ing***

(4.4) John's/His/The singing **of** the Marseillaise was slow. ***ing*-OF**

[4]Not all gerunds are interpreted as events, of course. Among the types of gerunds discussed in what follows in this thesis, gerunds subcategorized by manner adjectives denote events (cf. section 4.2), and POSS-*ing* and PRO-*ing* gerunds can sometimes be interpreted as events, whereas ACC-*ing* gerunds cannot (cf., e.g., Asher, 1993, ch. 5). Also, the resemblance to gerunds in form mentioned here holds, of course, in the first instance for deverbal event nominalizations derived by means of the suffix *–ing*.

[5]Abney (1987) identifies three types of gerunds illustrated in (4.3); in fact, however, there are more types. Another type, which will also be discussed in this thesis (section 4.2), are gerunds subcategorized by manner adjectives.

[6]Thus, unlike *–ment*, *–ance*, and the other suffixes mentioned before, *–ing* can form both deverbal event nouns and gerunds; see section 4.1.2.2 for a discussion of whether it is the same suffix in both cases. Besides, *–ing* also forms the present participle (part of the progressive and nominal modifier), which will not be discussed in this thesis.

Thus, Abney distinguishes between three types of gerunds, which he calls 'ACC-*ing*', 'POSS-*ing*', and 'PRO-*ing*' based on the status of their subjects: ACC-*ing* assigns accusative to its subject, POSS-*ing*—genitive, and PRO-*ing* lacks an overt subject. By contrast, the direct object of all these three types of gerunds receives accusative Case, which makes them different from what Abney calls '*ing*-OF' (i.e., deverbal event nominalizations formed by means of *–ing*), whose direct object is introduced by *of*.

The four *–ing* forms in (4.3) and (4.4) are superficially quite similar; in fact, in the absence of a direct object and in the presence of a genitive 'subject', POSS-*ing* and *ing*-OF are indistinguishable. Yet the gerunds in (4.3) are not nominalizations, i.e., do not contain an NP in their internal structure, as they cannot take adjectival (pre-)modifiers, but only adverbial ones, while the opposite is true of the *ing*-OF form:

(4.5) a. John $\left\{\begin{array}{c}\text{*beautiful}\\ \text{beautifully}\end{array}\right\}$ singing the Marseillaise

ACC-*ing*

b. John's $\left\{\begin{array}{c}\text{*beautiful}\\ \text{beautifully}\end{array}\right\}$ singing the Marseillaise

POSS-*ing*

c. $\left\{\begin{array}{c}\text{*beautiful}\\ \text{beautifully}\end{array}\right\}$ singing the Marseillaise

PRO-*ing*

(4.6) a. John's $\left\{\begin{array}{c}\text{beautiful}\\ \text{*beautifully}\end{array}\right\}$ singing of the Marseillaise

ing-OF

b. his $\left\{\begin{array}{c}\text{thorough}\\ \text{*thoroughly}\end{array}\right\}$ explanation of the accident

–ation

c. his $\left\{\begin{array}{c}\text{deliberate}\\ \text{*deliberately}\end{array}\right\}$ removal of the evidence

–al

Let us sum up. According to the criteria discussed above, what will be considered as event nominals in this thesis are deverbal nominalizations, such as the ones in (4.1) and (4.4); non-deverbal nouns and gerunds, like in (4.2) and (4.3), do not fall under this category. Besides, the discussion above also revealed that manner modification of event nouns can be both adjectival and adverbial: Event nouns can take post-nominal manner adverbs, but, differently from gerunds, they cannot take pre-nominal ones, and this gap is filled by manner adjectives. Thus, we need to explain not

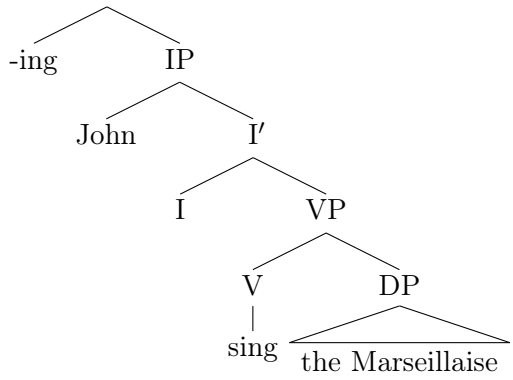
only how manner adjectives combine with event nouns, but also why pre-nominal manner adverbs are incompatible with them, while post-nominal ones are not. I will first address the latter question, by discussing the internal structure of event nominals in comparison with that of gerunds in section 4.1.2 below.[7] Under the analysis of the syntax of manner adverbs proposed in section 3.3.2, gerunds, but not event nominals, are predicted to contain an AspP in their structure, which makes it possible for manner adverbs to occur in their pre-modifying [Spec,AspP] position; we will see that this prediction is indeed borne out. Subsequently, section 4.1.3 turns to the question of how event nouns combine with manner adjectives.

4.1.2 Internal structure of event nouns and gerunds

In examining the internal structure of the *–ing* forms in (4.3)–(4.4), which have been distinguished by Abney (1987), let us first discuss the analysis Abney himself proposed for them.

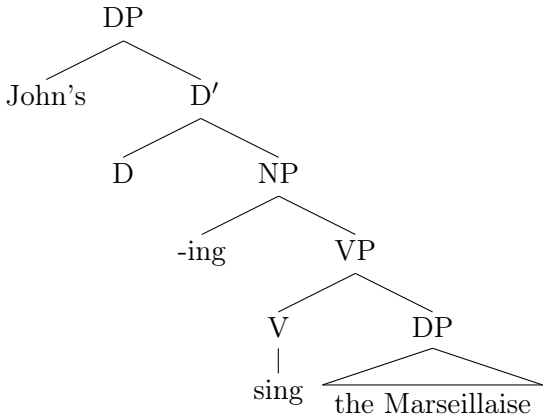
Among the four *–ing* forms in (4.3)–(4.4), Abney concentrates mainly on ACC-*ing*, POSS-*ing*, and *ing*-OF, assuming that PRO-*ing* is a special case of ACC-*ing*, POSS-*ing*, or both. He argues that in all of these forms *–ing* has the same basic function—namely, to convert a verbal projection into a nominal category (N/NP/DP)—but a different attachment height: IP in ACC-*ing*, VP in POSS-*ing*, and V in *ing*-OF. Thus, on his analysis, the structures of these three *–ing* forms are as shown below (see Abney, 1987, 141–142).

(4.7) ACC-*ing*

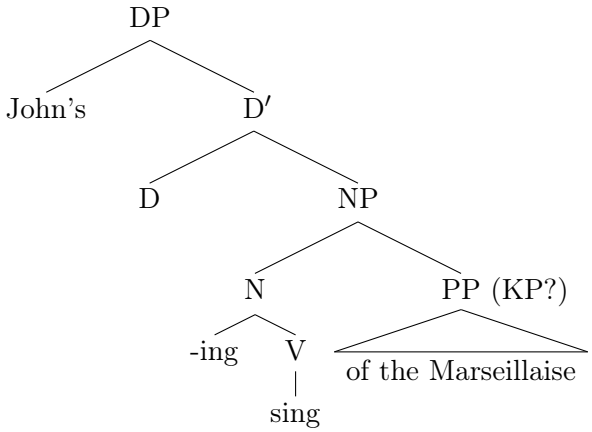


[7] Section 4.1.2 contrasts event nominalizations only with the types of gerunds distinguished by Abney (1987), as is often done. However, as already mentioned before, there are also other types of gerunds; for example, section 4.2 discusses prepositional gerunds subcategorized by manner adjectives.

(4.8) POSS-*ing*



(4.9) *ing*-OF



Thus, Abney assumes that nominalization by means of *–ing* can occur at the level of V, VP, or IP, resulting in *ing*-OF, POSS-*ing*, and ACC-*ing*, respectively. In what follows, I will discuss the relevant data with respect to the question which projections undergo nominalization in these forms and which other layers are present in their structure (and arrive at somewhat different conclusions than Abney). But before, let me point out the inadequacies in Abney's analysis in (4.7)–(4.9) regarding the presence or absence of an **NP** and a **VP** in the structure of these *–ing* forms, which become obvious in view of the data discussed in section 4.1.1.

Similarly to what has been assumed in section 4.1.1, the *ing*-OF form is set apart in Abney (1987) as a deverbal noun, which "lacks the verbal characteristics to be found in the other cases" (Abney, 1987, 107), i.e., in POSS-*ing* and ACC-*ing*. Yet, this distinctness of *ing*-OF from the other forms is, in fact, not reflected in Abney's structures in (4.7)–(4.9), which reveal an overall morphosyntactic similarity between *ing*-OF and POSS-

ing. In particular, both of them are supposed to lack an IP and, what is more important for me now, to contain an NP, unlike the ACC-*ing* form. The presence of an NP in the internal structure of POSS-*ing* implies that APs can adjoin to it; however, as we saw in (4.5) and (4.6) above, POSS-*ing* is like ACC-*ing* and unlike deverbal event nouns including *ing*-OF in allowing adverbial, but not adjectival (pre-)modifiers. Thus, its structure in (4.8) needs to be modified accordingly, so as not to contain an NP.

A respect in which the *ing*-OF form *is* different from both POSS-*ing* and ACC-*ing* under Abney's analysis is the absence of a VP in its structure: Unlike in POSS-*ing* and in ACC-*ing*, in *ing*-OF the nominalization is supposed to occur at the level of V, which thus does not project a VP. However, precisely in this respect, all these three *–ing* forms are assumed to be alike in this thesis, as *ing*-OF, and deverbal event nouns in general, have been argued in section 4.1.1 to contain a VP.[8] The structure of *ing*-OF in (4.9) thus requires an according modification.

Thus, differently from Abney (1987), I assume that all the *–ing* forms illustrated in (4.3) and (4.4), and, in fact, all types of gerunds and deverbal event nominalizations, contain a VP in their structure, but only *ing*-OF among these *–ing* forms has an NP layer, like event nouns in general. Let us now discuss which other projections are located above VP in event nouns and in Abney's types of gerunds by examining their syntactic and distributional properties. Section 4.1.2.1 presents a first set of properties, which distinguish between event nouns, on the one hand, and POSS-*ing* and ACC-*ing* gerunds, on the other. Subsequently, in section 4.1.2.2, we will discuss a further set of properties, which distinguish between POSS-*ing* gerunds and their ACC-*ing* counterparts.[9]

[8] As discussed in section 4.1.1, the ability of event nouns, including *ing*-OF, to take post-nominal VP-adverbs (see (4.1)) cannot serve as an argument for the presence of a VP in their structure, since, being analyzed as PPs in this thesis, adverbs may also adjoin to the NP in such nominals. By contrast, the ability of ACC-*ing* and POSS-*ing* gerunds to take VP-adverbs (both as pre- and as post-modifiers, cf. (4.5)) does imply that they contain a VP, because NP, which would be an alternative adjunction site, is missing in their structure (as their incompatibility with adjectives suggests, cf. (4.5)). Furthermore, it will be shown in section 4.1.2.2 that ACC-*ing* and POSS-*ing* gerunds contain higher verbal projections, which implies the presence of a VP in their internal structure as well.

[9] In what follows, I will not consider the PRO-*ing* form to be a separate gerundive type, but will rather assume, following Abney (1987), that it is a special case of either ACC-*ing*, POSS-*ing*, or both. The more specific question of which of these two forms it actually belongs to is outside the scope of this thesis. See Reuland (1983); Johnson (1988); Milsark (1988); L. Siegel (1998); Pires (2001, 2006, 2007) for discussion of this issue.

4.1.2.1 Perfect vs. imperfect nominals

The relevant properties that differentiate event nouns from gerunds have been discussed already by Vendler (1967) in connection with his distinction between "perfect" and "imperfect" nominals, i.e., nominalizations "in which the verb acts like a noun" and those "with the live verb in [them]" (Vendler, 1967, 131).[10] Vendler draws this distinction along the following lines:[11]

(i) imperfect nominals can directly select for a complement and assign accusative to it, while perfect nominals cannot, therefore their complements require the insertion of the last-resort Case-marker *of*;

(ii) imperfect, but not perfect, nominals are compatible with aspectual auxiliaries, can be modalized, and take verbal negation;

(iii) perfect nominals can take adjectives, but not adverbs, as pre-modifiers, while the opposite holds for imperfect nominals;

(iv) perfect nominals require the presence of a determiner, by contrast, imperfect nominals cannot occur with determiners.

And Asher (1993, 18–20) points out another difference between these two classes of nominals, which has not been noted by Vendler:

(v) perfect nominals pluralize, while imperfect nominals do not.

Mapping Abney's types of *–ing* forms onto Vendler's classes of nominals, we observe that *ing*-OF, and deverbal event nouns in general, belong to perfect nominals, while ACC-*ing* and POSS-*ing* gerunds—to imperfect nominals.[12] Let us see this for each of the criteria in (i)–(v) individually.

[10] Vendler's (1967) "perfect nominals" and "imperfect nominals" correspond, respectively, to his "*e*-nominals" and "*d*-nominals" in Vendler (1968), which were mentioned in section 2.2.1.

[11] Vendler also discusses semantic differences between these two classes of nominals, in particular, the fact that perfect nominals are generally interpreted as events, while imperfect nominals—as facts (recall, though, that POSS-*ing* and PRO-*ing*, which, as we will see below, belong to imperfect nominals, are sometimes interpreted as events too, unlike ACC-*ing*, see fn. 4 in section 4.1.1). However, I am now mainly interested in those properties of perfect and imperfect nominals, or, more precisely, event nouns and gerunds, that tell us something directly about their internal structure, therefore, will not discuss their interpretative differences in more detail.

[12] Abney does not discuss how his *–ing* forms map onto Vendler's perfect and imperfect nominals, but discusses all the properties in (i)–(iv).

According to (i), Abney's ACC-*ing* and POSS-*ing* gerunds belong to imperfect nominals. Recall from section 4.1.1 that their ability to assign accusative Case to their direct objects is a descriptive characteristic that distinguishes them from *ing*-OF, which makes use of the last-resort Case-marker *of*, like event nouns formed by means of other suffixes (cf. (4.1)), and, thus, falls under the category of perfect nominals in this respect.

Also with respect to (ii), ACC-*ing* and POSS-*ing* pattern together as imperfect nominals, setting apart *ing*-OF and deverbal event nominalizations derived by means of other suffixes, as the examples in (4.10)–(4.12) based on Vendler (1967, 130) demonstrate.[13]

(4.10)	a.	John having cooked the dinner	ACC-*ing*
	b.	John's having cooked the dinner	POSS-*ing*
	c.	*John's having cooked of the dinner	*ing*-OF
(4.11)	a.	John being able to cook the dinner	ACC-*ing*
	b.	John's being able to cook the dinner	POSS-*ing*
	c.	*John's being able to cook of the dinner	*ing*-OF
(4.12)	a.	John not revealing the secret	ACC-*ing*
	b.	John's not revealing the secret	POSS-*ing*
	c.	*John's not revealing of the secret	*ing*-OF

Further, it has already been shown in (4.5)–(4.6) in section 4.1.1 that with respect to (iii), i.e., with respect to the possibility of adjectival/adverbial modification, event nominalizations, including *ing*-OF, belong to perfect nominals, while ACC-*ing* and POSS-*ing*—to imperfect nominals. The examples in (4.13), discussed in Vendler (1967, 131), show this now with respect to (iv), i.e., with respect to the possibility/necessity to take a determiner.[14]

(4.13) a. (*the) singing the Marseillaise
b. *(the) singing of the Marseillaise

Finally, the examples in (4.14) from Asher (1993, 18, 20) demonstrate that Abney's types of gerunds differ from deverbal event nominalizations,

[13](4.10)–(4.12) do not contain examples with event nouns formed by means of other suffixes than *–ing*, as they trivially cannot incorporate auxiliaries, modals, and verbal negation.

[14]To be more precise, what (4.13a) demonstrates is that the *null subject* version of ACC-*ing* (i.e., PRO-*ing*) cannot take a determiner, while for POSS-*ing* it shows that it cannot occur with other determiners than *'s*, in other words, that in POSS-*ing* the possessor cannot be omitted. See section 4.1.2.2 for a discussion.

and, in particular, from *ing*-OF, with respect to (v), as, unlike the latter, they do not take plural morphology.

(4.14) a. *Many sackings the city took place between 1000 and 340 BC.
b. Many violent sackings of the city took place from 1000 to 340 BC.

Thus, according to the criteria in (i)–(v), ACC-*ing* and POSS-*ing*, on the one hand, and *ing*-OF (and deverbal event nouns in general), on the other, belong to different classes of 'nominals'. The former are imperfect nominals, i.e., they retain a number of active verbal properties, including the ability to assign accusative to their direct object and to take modals, auxiliaries, verbal negation, as well as pre-modifying adverbs. The latter are perfect nominals, which lost these verbal properties in the process of nominalization and acquired instead a range of nominal properties, viz., the ability to take adjectives and determiners and to pluralize, which are missing in imperfect nominals.[15] Let us now see what these nominal and verbal properties mean in terms of the internal structure of event nouns and of ACC-*ing* and POSS-*ing* gerunds. In what follows, I will first discuss event nouns; gerunds will be addressed in section 4.1.2.2 after some further data relevant for the discussion of their morphosyntax have been presented.

Let us start with the **verbal** properties of event nouns, which largely got lost in the process of nominalization, cf. (i)–(ii). It has already been argued in section 4.1.1 above that event nouns contain a VP; we will see now that in fact no further verbal (functional) projections are present on top of VP in their internal structure. In particular, under the assumption that direct objects receive accusative Case from Voice (section 1.3.1), the inability of event nouns to assign accusative to the direct object implies the absence of a VoiceP in their structure (Kratzer, 1996; cf. also Harley & Noyer, 1998; Moulton, 2004; Harley, 2009b). In turn, the absence of a VoiceP presupposes that higher verbal projections are not present either, which is corroborated by the following facts: The incompatibility of event nouns with aspectual auxiliaries, modals, and verbal negation, illustrated in (4.10)–(4.12), rules out the presence of AspP, PerfP, ModP, and NegP, while their incompatibility with sentential adverbs, demonstrated by the

[15] In this sense, Vendler's term "imperfect nominals" is misleading in the absence of these nominal properties. For *–ing* forms like ACC-*ing* and POSS-*ing*, I therefore use the term "gerunds" instead.

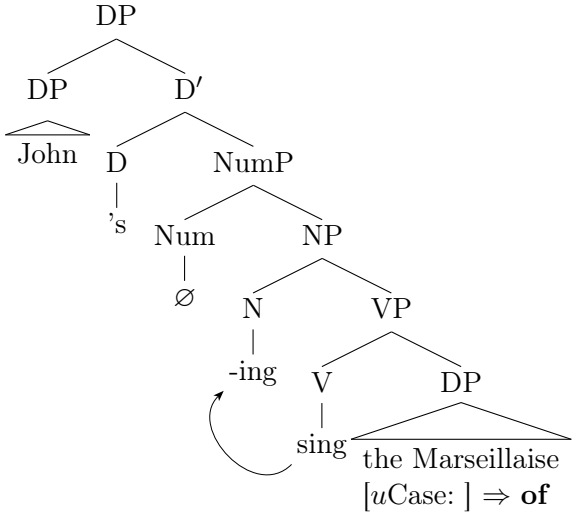
examples in (4.15) and (4.16) from Fu et al. (2001), suggests the absence of TP in their structure.[16]

(4.15) a. *His explanation of the problem *fortunately* to the tenants did not cause a riot.
b. *The giving of the books *fortunately* to the library made it possible for us to go on working.
c. *John's *fortunately* removal of the evidence saved my life.

(4.16) a. *His removal of the evidence *presumably* promised a lengthy trial.
b. *His removing of the evidence *presumably* was severely criticized.

Turning now to the **nominal** properties of deverbal event nouns, we can see that they prevail over the verbal ones, cf. (iii)–(v). In particular, event nouns allow for modification by adjectives, pluralize, and require a determiner. As already discussed in section 4.1.1, the possibility of adjectival modification implies the presence of an NP; the ability to pluralize indicates the presence of a NumP headed by number morphology (Ritter, 1991, and much subsequent work); and the necessity to take determiners entails the presence of a DP. Accordingly, the structure of event nouns is as shown below for the *ing*-OF form *John's singing of the Marseillaise*:

(4.17) *ing*-OF



[16]Since sentential adverbs typically occupy some position *before* the main verb, it is important to show that event nominals cannot take *pre-modifying* sentential adverbs, cf. **his fortunately explanation of the problem* or **the fortunately giving of the books.*

Some remarks are necessary here regarding the proposed morphosyntactic structure of event nouns in (4.17) above.

First, following a standard view, I assume that the NP in the structure of event nouns is headed by the suffix, i.e., that the suffixes *–ment*, *–(a)tion*, *–ance/–ence*, *–al*, etc., as well as *–ing*[17], are nominalizing morphemes (cf., e.g., Abney, 1987; Grimshaw, 1990; Alexiadou, 2001b; Borer, 2013, among many others). Furthermore, I also quite standardly assume that V undergoes head movement to N in order to form a morphological unit with it, because affixes require a host (see Abney, 1987, 151ff., for a discussion of the alternative possibility of affix lowering in *–ing* forms).[18]

Second, the Case feature of the direct object DP remains unchecked because Voice, which is otherwise responsible for the assignment of accusative to it, is absent, and other Case-assigning positions are not available either. This triggers the (post-syntactic) insertion of the last-resort Case-marker *of* (a *dissociated morpheme* in the terminology of Embick, 1997), which ensures the convergence of the derivation (see, e.g., Kratzer, 1996; Harley & Noyer, 1998; Harley, 2009b).

Third, in the absence of a VoiceP, genitive 'subjects' of event nouns are generated in [Spec,DP] as simple possessors and not in [Spec,VoiceP] as external arguments assigned a corresponding θ-role, for instance, that of agent. Therefore, they are predicted to be interpreted via the so-called "possessive nexus"—an underspecified semantic relation between the possessor and the possessed (an event in this case), which may of course also be realized as **agent** in certain contexts. Indeed, this prediction accords with the range of interpretations available to genitive DPs in event nominals, which can, but need not, be interpreted as agents (see the discussion in Kratzer, 1996; Marantz, 1997; Harley, 2009b).[19]

[17] At this moment, I assume that *–ing* in event nouns is a category-changing nominal head, like the other suffixes mentioned above. However, *–ing* cannot be a nominal head neither in gerunds, as we will see in section 4.1.2.2 below, nor in the present participle. In order to provide a unified analysis of *–ing* in event nouns and gerunds, it might be assumed that *–ing*, unlike *–ment*, *–(a)tion*, etc., is not a nominal head in event nouns, but a dissociated morpheme inserted because the Infl feature of V remains unchecked (as will be assumed with respect to gerunds), while the nominal head in event nouns formed by means of *–ing* is null. See section 4.1.2.2 for further discussion.

[18] Note also that, although the discussion of nominal functional projections between NP and DP is outside the scope of this thesis (section 1.3.3), the presence of a NumP in the structure of event nouns in (4.17) is pointed out in order to show that they differ in this respect from gerunds, whose internal structure will be discussed in section 4.1.2.2 below.

[19] The absence of a VoiceP in event nominals also implies that they do not have an *implicit* external argument realized as a PRO when there is no genitive DP (see, e.g.,

Before turning to the discussion of the internal structure of gerunds, it should be pointed out that, even though both *ing*-OF and event nouns formed by means of suffixes other than *–ing* are given the same morpho-syntactic analysis in (4.17) because they share the properties of "perfect nominals" in (i)–(v), they also differ in some respects. In what follows, I will mention two features with respect to which *ing*-OF nominalizations differ from the rest of event nouns.

First, *ing*-OF nominalizations differ from other event nouns in being restricted to *atelic* events (cf. Pustejovsky, 1995, § 8.5; Alexiadou, 2001b, § 3.3; Borer, 2005b, § 8.2.4). This is suggested by their compatibility with aspectual *for*-phrases, but not with *in*-phrases and iterative adverbs like *twice*, and by the reluctance of *achievement* verbs to make felicitous *ing*-OF forms, as the examples in (4.18)–(4.20) and (4.21)–(4.22) from Borer (2005b, 239–240) demonstrate. Notice that *ing*-OF nominalizations differ in this respect not only from the rest of event nouns, but also from other *–ing* forms, i.e., from gerunds, as well as from the progressive.

(4.18) Kim's formulating of government policy { for several weeks / *in two weeks / ??twice }

(4.19) Kim's formulation of government policy { in two weeks / twice }

(4.20) Kim formulating government policy { for several weeks / in two weeks / twice }

(4.21) a. */#Kim's reaching of the summit
b. */#Pat's ending of the flood
c. */#Robin's finding of (the) oil
d. */#the bulldozer's hitting of (the) bedrock

(4.22) a. Kim reaching the summit
b. Pat ending the flood
c. Robin finding (the) oil
d. the bulldozer hitting (the) bedrock

van Hout & Roeper, 1998, for an analysis of event nouns as containing a PRO). However, the presence of implicit external arguments in event nouns is suggested by what seems to be their ability to control and to be controlled (see, e.g., Bhatt & Pancheva, 2006, for a review of the data). But see Williams (1985, 1987); Abney (1987, § 3.3.2); Kratzer (1996); Borer (2013, § 5.1) for a critical discussion of these data, which seem to involve control, and arguments against the presence of a PRO in event nominals.

Second, while all event nouns, unlike gerunds, disallow particle shift, *ing*-OF differs from other event nouns in allowing for *unshifted particles*, being like gerunds in this respect (cf. Lees, 1960; Chomsky, 1970; Harley & Noyer, 1998; Borer, 2005b; Harley, 2009b; Sichel, 2010), as the following examples from Sichel (2010) demonstrate:

(4.23) a. John's explanation (*away) of the problem (*away)
b. John's explaining (away) of the problem (*away)
c. John's explaining (away) the problem (away)

Sichel (2010) suggests that this difference between *ing*-OF and event nouns formed by means of other suffixes has to do with *event complexity* and is not reflected in morphosyntactic structure. Specifically, she argues that among event nouns only *ing*-OF forms may denote complex events, created, among others, by the addition of particles.

If Sichel's analysis is on the right track, it needs to be explained why *ing*-OF nominals can be formed from verbs with (unshifted) particles, as in (4.23b), which are derived accomplishments and hence telic, although examples such as the ones in (4.18) and (4.21) indicate that *ing*-OF formation is restricted to verbs denoting atelic events. A discussion of event complexity and (a)telicity would, however, take me too far afield. Therefore, I will assume for now that the contrasts between *ing*-OF and other event nouns in (4.18)–(4.19) and (4.23a)–(4.23b) do not imply differences in their internal structure, but, rather, have to do with differences in the semantics of *–ing* and the other nominalizing suffixes, which require verb bases of distinct aspectual types.[20]

4.1.2.2 ACC-*ing* vs. POSS-*ing* gerunds

According to the criteria (i)–(v), discussed in section 4.1.2.1 above, both POSS-*ing* and ACC-*ing* gerunds belong to the class of "imperfect nominals", which, unlike "perfect nominals", have predominantly verbal properties. In what follows, I will first briefly recapitulate what (i)–(v) imply with respect to the internal structure of deverbal forms like gerunds and then introduce an additional set of criteria, which distinguish POSS-*ing* from ACC-*ing* and provide further details concerning the morphosyntax of these two types of gerunds.

[20] With respect to the data in (4.18)–(4.20), (4.21)–(4.22), and (4.23), *ing*-OF forms differ not only from the rest of event nominals, but also from gerunds, which is taken by Borer (2005b) as evidence that *–ing* in gerunds and *–ing* in *ing*-OF are two distinct morphemes; see section 4.1.2.2 for further discussion.

Both POSS-*ing* and ACC-*ing* possess the verbal properties stated in (i)–(ii): They assign accusative to their direct objects, which implies the presence of VoiceP in their structure, and can take aspectual auxiliaries, modals, and verbal negation, as the examples in (4.10)–(4.12) illustrate, which indicates that they also contain AspP, PerfP, ModP, and NegP. In contrast, POSS-*ing* and ACC-*ing* lack the nominal properties in (iii)–(v) in not being able to take adjectives, form plurals, and appear with determiners, as shown in (4.5), (4.14), and (4.13), respectively, which suggests the absence of NP, NumP, and DP in the structure of these gerunds.[21]

Before proceeding to the differences between POSS-*ing* and ACC-*ing* gerunds, let me make some remarks about the presence of AspP in their structure, which is argued for above on the basis of examples like (4.10). What (4.10a) and (4.10b), repeated in (4.24) below, demonstrate is that POSS-*ing* and ACC-*ing* can take the perfect auxiliary *have*, which indicates the presence of PerfP (and hence indirectly that of AspP below it). Yet, as (4.25) shows, these gerunds cannot take the progressive auxiliary *be*, which would provide direct evidence for the presence of AspP.

(4.24) John('s) having cooked the dinner

(4.25) *John('s) being cooking the dinner

In fact, however, the ungrammaticality of (4.25) is not due to the absence of AspP, but rather results from the violation of a constraint noted by Ross (1972) that forbids two *–ing*-inflected verbs to be adjacent (Ross called it the Doubl-ing Constraint; cf. also the Distinctness Condition of Richards, 2010). This becomes obvious from the fact that the progressive *be* can occur in POSS-*ing* and ACC-*ing* when it is a higher auxiliary that is inflected with *–ing* and so there are no adjacent *–ing* forms, cf. (4.26). Examples like (4.26) thus confirm that AspP is present in these gerunds.

(4.26) John('s) having been cooking the dinner

Besides, the infelicity of adjacent *–ing* forms arises not only with the progressive *be*, as in (4.25), but also with lexical verbs taking a gerundive complement, cf. (4.27) from Ross (1972), which further suggests that the deviance of (4.25) is not related to the presence or absence of AspP.

(4.27) *His keeping chanting ads bugs me.

[21] However, below we will see some evidence that POSS-*ing*, but not ACC-*ing*, does contain a DP. Its inability to appear with determiners will, therefore, be explained in a different way than as being due to the absence of a DP.

Let us now see what distinguishes ACC-*ing* gerunds from their POSS-*ing* counterparts. Properties that these two types of gerunds do not share include the following ones (cf. Horn, 1975; Williams, 1975; Reuland, 1983; Abney, 1987; Portner, 1992; Zucchi, 1993; Malouf, 2000; Pires, 2006):

(vi) whereas ACC-*ing* gerunds are compatible with sentential adverbs, POSS-*ing* gerunds are not;

(vii) the subject position of ACC-*ing*, but not that of POSS-*ing*, can be filled with an expletive, such as *there* or *it*;

(viii) ACC-*ing* gerunds assign accusative to their subjects, while POSS-*ing* gerunds are like event nouns in assigning genitive to them;

(ix) while with conjoined ACC-*ing* forms the verb shows default singular agreement, conjoined POSS-*ing* forms trigger plural agreement;

(x) the complements of ACC-*ing* gerunds, but not POSS-*ing* gerunds, allow long-distance *wh*-extraction.

Among the points listed above, let us first consider those in (vi)–(viii), which relate to the presence or absence of a **TP**.

Thus, given that sentential adverbs are modifiers of TP, the ability to license them indicates the availability of a TP. Accordingly, the fact that ACC-*ing* gerunds are able to take sentential adverbs, whereas POSS-*ing* gerunds are not, as the examples in (4.28)–(4.29) from Abney (1987, 115) demonstrate, implies that a TP is present in the structure of the former, but not of the latter.[22]

(4.28) a. John *probably* being a spy, Bill thought it wise to avoid him.
b. ?*John's *probably* being a spy made Bill think it wise to avoid him.

(4.29) a. John *fortunately* knowing the answer, I didn't fail the test.
b. ?*John's *fortunately* knowing the answer kept me from failing.

Likewise, expletives indicate the presence of a TP projection as well, since an expletive subject is only necessary if no other XP is available to raise to [Spec,TP] in order to satisfy the Extended Projection Principle,

[22]However, ACC-*ing* appears not to take sentential adverbs when it is in argument position, see the discussion in Abney (1987, 115).

the EPP, which requires that all clauses have a subject (Chomsky, 1981, 1982). Hence, the fact that expletive subjects occur in ACC-*ing* gerunds, but not in POSS-*ing* gerunds, see (4.30) below from Pires (2006, 18–19), suggests again that only the former contain a TP, whose specifier position must be filled due to the EPP.[23]

(4.30) a. You may count on *there*(*'s) being a lot of trouble tonight.
b. I wouldn't count on *it*(*'s) raining tomorrow.

Thus, the observations in (vi) and (vii) lead us to conclude that a TP is present in the structure of ACC-*ing*, but not of POSS-*ing*. Furthermore, this conclusion is also consistent with the fact described in (viii), namely, that ACC-*ing* gerunds assign accusative Case to their subjects, while the subjects of POSS-*ing* gerunds are assigned genitive, which is the feature that gave them their names (cf. section 4.1.1). Let us see why.

As discussed above, both ACC-*ing* and POSS-*ing* gerunds contain in their structure a Voice head that assigns accusative to the internal argument. Hence, according to Burzio's generalization (cf. section 1.3.1), both ACC-*ing* and POSS-*ing* also contain the external argument generated in [Spec,VoiceP], which needs to receive Case as well. The question is, thus, what assigns Case to it in each of these cases.

In the case of ACC-*ing* gerunds, the presence of a TP in their structure, argued for above, implies that their external argument can receive Case from T in the 'subject position', i.e., in [Spec,TP], like the external argument of finite clauses. However, unlike in finite clauses, the subjects of ACC-*ing* gerunds bear accusative, rather than nominative Case. This fact may be taken to be due to the *defectiveness* of the non-finite T head in gerunds of this type. In particular, it may be assumed that, since this T head does not license finite tense marking on the verb, it also does not assign nominative to its specifier and instead assigns accusative to it, or, alternatively, that this T head does not assign Case at all and accusative is default Case (cf., e.g., Schütze, 2001; Pires, 2006, 58–60). By contrast, if ACC-*ing* gerunds are argued not to contain a TP in their structure, it is unclear what assigns accusative to their subjects.

In turn, in the case of POSS-*ing*, the assumption that gerunds of this type lack a TP projection in their morphosyntactic structure implies that their external argument cannot receive Case in [Spec,TP] and, therefore,

[23] In the absence of a TP, the 'subjects' of POSS-*ing* gerunds will be assumed below to occupy [Spec,DP], which is a thematic position in English, while expletives are only licensed in non-thematic positions (cf., e.g., Alexiadou, 2001b, for a discussion).

must check Case elsewhere. This agrees with the fact that the subject of POSS-*ing* gerunds bears genitive, which is not assigned by T in English; rather, it is normally assigned by D. However, the latter presupposes the presence of a DP in the structure of POSS-*ing* gerunds, while the inability of gerunds to appear with determiners, illustrated in (4.13), seems to suggest the opposite.

In this connection, let us now discuss the observations in (ix) and (x), which, as we shall see, indicate that a **DP** is indeed present in POSS-*ing* gerunds, but is absent in ACC-*ing* gerunds. After that, the data in (4.13) will be reconsidered; we will see that the inability of POSS-*ing* to appear with (certain) determiners in fact does not necessarily imply the absence of a DP in its structure, but can also be explained in a different way.

Let us start with the number agreement facts stated in (ix). Whereas a conjunction of DPs in subject position triggers plural agreement on the verb (except in cases when both DPs refer to the same single individual), this does not hold for conjoined sentential subjects, with which the verb shows default singular agreement, cf. (4.31) based on Abney (1987, 111). In this respect, conjoined POSS-*ing* forms and conjoined ACC-*ing* forms behave like DPs and clauses, respectively, as Abney's examples in (4.32) show, and, given that D is the locus of φ-features, this fact suggests that the former, but not the latter, contain a DP layer in their structure.[24]

(4.31) a. John and Mary $\left\{\begin{matrix}\text{*bothers}\\ \text{bother}\end{matrix}\right\}$ me.

b. That John came and that Mary left $\left\{\begin{matrix}\text{bothers}\\ \text{*bother}\end{matrix}\right\}$ me.

(4.32) a. John's coming and Mary's leaving $\left\{\begin{matrix}\text{*bothers}\\ \text{bother}\end{matrix}\right\}$ me.

b. John coming and Mary leaving $\left\{\begin{matrix}\text{bothers}\\ \text{*bother}\end{matrix}\right\}$ me.

The presence of a DP in the structure of POSS-*ing*, but not ACC-*ing* is further supported by the extraction facts in (x), first observed by Horn as well. Horn (1975, 359, 379) noticed that the complements of POSS-*ing* do not allow long *wh*-extraction, while the complements of ACC-*ing* do:

(4.33) a. Who did you defend Bill(*'s) hitting?

b. What did everyone imagine Fred(*'s) singing?

[24] This difference in the agreement behavior of POSS-*ing* and ACC-*ing* gerunds was first noticed by Horn (1975). See Portner (1992) for a critical evaluation of these data.

Based on examples like (4.34), it has been argued that extraction out of DP proceeds through its specifier position and is, therefore, impossible when [Spec,DP] is already occupied, for instance, by a possessor (cf., e.g., Giorgi & Longobardi, 1991; Sportiche, 1998).[25] In this light, the fact that POSS-*ing* gerunds do not allow long-distance *wh*-extraction of their complement follows if these gerunds are DPs and their 'subject' occupies the [Spec,DP] position.[26] In turn, the possibility of long *wh*-movement out of ACC-*ing* indicates that gerunds of this type do not contain a DP, whose specifier position is filled by their 'subject'.[27]

(4.34) a. Who did you see pictures of?
b. *Who did you see John's pictures of? (Chomsky, 1973)

Therefore, in view of these facts, I will assume that, unlike ACC-*ing*, POSS-*ing* has a DP layer in its structure and that its external argument raises from [Spec,VoiceP] to [Spec,DP] to check genitive Case[28] (while the external argument of ACC-*ing* is assigned accusative Case in [Spec,TP]). Having established this, let us now turn back to the data in (4.13), which show that ACC-*ing* cannot take a determiner in general, while POSS-*ing* cannot occur with other determiners than *'s*. ACC-*ing*'s inability to take determiners follows straightforwardly from the absence of a DP in its internal structure. By contrast, the fact that DP in POSS-*ing* gerunds can only be headed by *'s* comes about insofar as *'s* is the only Case-assigning determiner in English. Hence, if the external argument of POSS-*ing* cannot receive Case from *'s* in the [Spec,DP] position because DP is headed by a different determiner, the derivation will not converge, since no other

[25] That extraction out of DP takes place via [Spec,DP] would follow from DP being a *phase* in the sense of Chomsky (2000, 2001), as successive cyclic *wh*-movement must pass through the edge of the phase. DPs are indeed sometimes assumed to be phases, see, e.g., Svenonius (2004).

[26] However, see, e.g., Portner (1992); Malouf (2000); Schueler (2006) for an explanation of the contrast in (4.33) in terms of specificity/presuppositionality.

[27] The presence in ACC-*ing* gerunds of a TP, whose specifier position is occupied by their subject, does not block long *wh*-movement, as it does not proceed via [Spec,TP], since TPs, unlike CPs, are not phases. Moreover, the presence in ACC-*ing* gerunds of a CP, the possibility of which will be discussed below, would not block it either, since [Spec,CP] would be empty in this case. We will see, though, that there are reasons to assume that ACC-*ing* gerunds do not contain a CP in their structure.

[28] This analysis is also consistent with the fact that the 'subject' of POSS-*ing* must be interpreted as the bearer of an external argument θ-role, e.g., agent (Kratzer, 1996; Harley, 2009b), rather than via the possessive nexus, like the 'subject' of event nouns, which also occupies [Spec,DP], but is base-generated there and hence does not receive an external argument θ-role from Voice (see the discussion in section 4.1.2.1).

Case-assigning positions are available to the external argument in POSS-*ing* gerunds in the absence of a TP.[29]

Finally, let us discuss another issue in connection with the structure of ACC-*ing*. According to the arguments presented above, ACC-*ing* gerunds contain a TP, but have no DP on top of it. The question is, then, whether TP is the highest projection in ACC-*ing* or **CP** is present in its structure as well. Based on the following two considerations, it has been argued by Stowell (1982) that gerunds, unlike (some types of) infinitives and tensed clauses, do not project a CP. First, the complementizers *for* and *that* cannot occur in gerunds, as (4.35)–(4.36) from Pires (2006, 26) demonstrate, while there is no special gerundive complementizer parallel to *for* or *that*.

(4.35) a. Ann wants very much [for Mike to work at home].
b. Ann wants very much [(*for) Mike working at home].

(4.36) a. Mark prefers [that Mary travel with him].
b. Mark prefers [(*that) Mary traveling with him].

Second, gerunds do not allow short *wh*-movement that forms indirect questions, as the examples below, based on Pires (2006, 27), demonstrate (see also Reuland, 1983, 112). This fact follows if the [Spec,CP] position, where the *wh*-feature can be checked, is missing in gerunds.[30]

(4.37) a. Jeff didn't remember [to buy groceries].
b. Jeff didn't remember [what$_i$ to buy t$_i$].

(4.38) a. Sue didn't remember [(Bill) buying groceries].
b. *Sue didn't remember [what$_i$ (Bill) buying t$_i$].

In view of these considerations, I will thus also assume that ACC-*ing* gerunds, and, in fact, gerunds in general, do not contain a CP projection in their structure.[31]

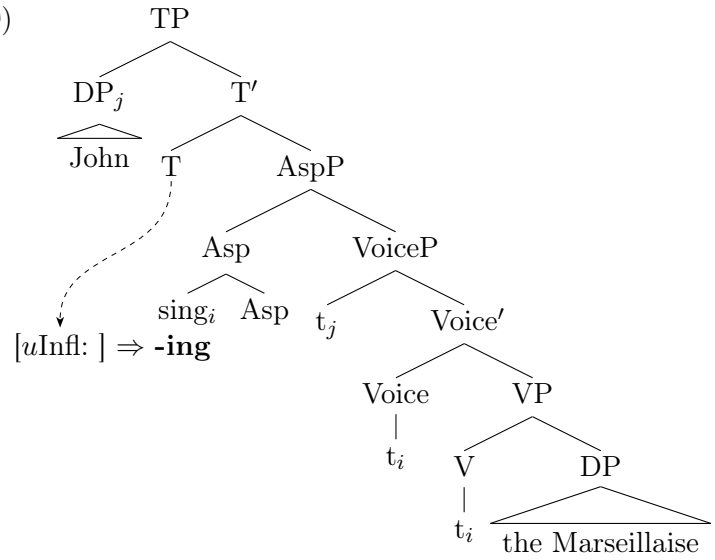
[29] If PRO-*ing* is a variant of POSS-*ing*, the same argumentation might also be used to explain why PRO-*ing* cannot occur with determiners, given that it is assumed that not only lexical subjects, but also PRO must be assigned Case, namely, null Case (cf. Chomsky & Lasnik, 1993; Martin, 2001). If, by contrast, PRO-*ing* is a special case of ACC-*ing*, its inability to take determiners follows from its lack of a DP layer.

[30] By contrast, long *wh*-movement is not hindered by the absence of an intermediate [Spec,CP] position in ACC-*ing*: Since TP is not a phase, the *wh*-phrase can just move directly to [Spec,CP] of the higher clause.

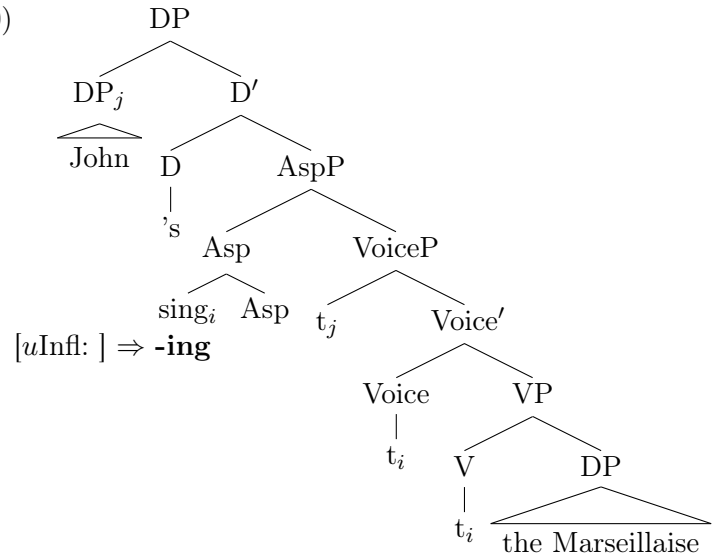
[31] Note, however, that a quantified subject of ACC-*ing*—but not POSS-*ing*—cannot take wide scope over the matrix clause (cf. Abney, 1987, 114–115), which would follow from the presence of a CP in the structure of ACC-*ing* gerunds, as QR cannot cross a CP boundary. This fact thus requires a different explanation on the present analysis.

Let us sum up the discussion so far. From the data presented above, I conclude that the following projections are present in the morphosyntactic structure of ACC-*ing* and POSS-*ing* gerunds:

(4.39) ACC-*ing*



(4.40) POSS-*ing*



Thus, the two types of gerunds differ with respect to the presence of DP and TP in their structure. POSS-*ing* gerunds are DPs which contain verbal projections up to and including AspP (and PerfP/ModP/NegP if the respective heads are overtly present), thus lacking both TP and CP.

By contrast, ACC-*ing* gerunds are TPs; neither CP nor DP is projected on top of TP in their structure.[32]

What has been left out of the discussion so far is the role of the affix *–ing* in ACC-*ing* and POSS-*ing* gerunds. In the structures above, it does not correspond to any syntactic head; let us now consider the reasons for this analysis.

It is obvious that *–ing* in ACC-*ing* and POSS-*ing* gerunds cannot be a nominalizing morpheme, as has been assumed earlier for *–ing* in event nouns (*ing*-OF), since gerunds lack an NP layer. If *–ing* is not a nominal head in ACC-*ing* and POSS-*ing*, it may be assumed to correspond either to the T head or to the Asp head, given that the structure of these types of gerunds is as proposed in (4.39) and (4.40). However, both options are problematic.[33]

While the analysis of *–ing* as the realization of a non-finite T, or Infl, may be applied in the case of ACC-*ing* gerunds (Reuland, 1983; see also Pires, 2006), it is not available for POSS-*ing* gerunds, since TP has been argued to be absent in their internal structure. Hence, *–ing* in POSS-*ing* will have to be analyzed in a different way, which is surprising if *–ing* in ACC-*ing* is supposed to encode non-finiteness, as these two gerund types do not differ in this respect. Also, the analysis that will have to be given to *–ing* in POSS-*ing* (for instance, as Asp) can likely be extended to *–ing* in ACC-*ing* as well, in which case it would be the preferred option, since we would avoid postulating two distinct *–ing* suffixes for these two types of gerunds.

By contrast, the analysis of *–ing* in gerunds as an aspectual affix (see L. Siegel, 1998; Bauke & Roeper, 2012; cf. also van Hout & Roeper, 1998) can be applied with respect to both ACC-*ing* and POSS-*ing*, since AspP has been assumed to be present in both varieties. However, this analysis

[32]That POSS-*ing* and ACC-*ing* belong to two different categories is also supported by the fact that they cannot be conjoined, as the examples in (i) from Malouf (2000) demonstrate. Furthermore, if POSS-*ing* gerunds are DPs, while ACC-*ing* gerunds are not, only the former should be able to conjoin with regular DPs, cf. (ii). Yet, some of my informants found conjunctions of DPs with ACC-*ing* as good as with POSS-*ing*.

(i) a. *Pat's coming and Chris leaving bothers/bother me.
b. *Pat coming and Chris's leaving bothers/bother me. (Malouf, 2000)

(ii) a. John's leaving the meeting and the resulting scandal annoyed us all.
b. ?John leaving the meeting and the resulting scandal annoyed us all.

[33]In principle, *–ing* may also be assumed to be Voice. However, this analysis cannot be on the right track because unaccusatives, which lack VoiceP, can form gerunds.

is problematic in view of the fact that gerunds of these types can contain a progressive form, as demonstrated in (4.26), repeated below. This fact shows that the gerundive *–ing* cannot correspond to the Asp head, as it is realized by the progressive *–ing* (or, more precisely, by *be*+*ing*).[34]

(4.41) John('s) having been cooking the dinner

Therefore, in light of these considerations, I will assume that the affix *–ing* in gerunds does not correspond to any syntactic head, but is rather added post-syntactically to ensure morphological well-formedness, i.e., is a *dissociated morpheme* in the terminology of Embick (1997). The reason of its insertion is the fact that the Infl feature of the (lexical or auxiliary) verb remains unchecked in gerunds, insofar as T, which is responsible for valuing this feature, does not lower to the verb, either due to its absence (as in POSS-*ing*) or due to its defectiveness (as in ACC-*ing*).

Given the analysis in section 4.1.2.1, we thus end up having two *–ing* affixes: *–ing* as a dissociated morpheme (in ACC-*ing* and POSS-*ing*) and *–ing* as a nominal head (in *ing*-OF). The question is then whether a unified treatment is possible and desirable. While the gerundive *–ing* cannot be a nominalizing suffix, as already discussed above, *–ing* in *ing*-OF may in principle be reanalyzed in terms of a dissociated morpheme, in which case the nominal head in *ing*-OF has to be assumed to be null, differently than in event nouns formed by means of other suffixes. However, in view of the fact that *ing*-OF nominalizations differ from gerunds with respect to such properties as (a)telicity of their base verbs (cf. section 4.1.2.1), I will follow Borer (2005b, § 8.2.4) in assuming that *–ing* in event nominalizations is different from *–ing* in gerunds.[35,36]

Having discussed the internal structure of event nominalizations and gerunds, we can now return to the questions raised at the end of section 4.1.1 that motivated this discussion: Why pre-modifying manner adverbs

[34] In section 4.2, we will discuss another variety of gerunds, which are subcategorized by manner adjectives. Since TP and AspP will be argued to be absent in their structure, their *–ing* cannot be analyzed as a T or Asp head either.

[35] Bauke & Roeper (2012) argue that the analysis of *–ing* in ACC-*ing* and POSS-*ing* gerunds and *–ing* in *ing*-OF nominals as two distinct suffixes receives cross-linguistic support from the fact that these two occurrences of *–ing* in English systematically correspond to two different morphemes in German, namely, *–en* in nominalized infinitives and *–ung* in nominalizations, respectively (see also Alexiadou et al., 2010). Moreover, it can also be supported diachronically, as Modern English *–ing* derives from two Old English affixes: *–end(e)*/*–ind(e)* and *–ung* (cf., e.g., Poutsma, 1923, 159ff.).

[36] On the other hand, it might be possible (and desirable) to give a unified analysis in terms of a dissociated morpheme to the gerundive *–ing* and the progressive *–ing*.

are incompatible with event nominalizations, but not with gerunds, while their post-modifying counterparts are compatible with both types of deverbal forms, and how manner adjectives can combine semantically with event nominalizations. Section 4.1.3 proceeds to answer these questions.

4.1.3 Manner pre-modifiers of event nouns

According to the analysis in section 3.3.2, manner adverbs are generated as right VP-adjuncts, which results in their post-verbal placement, while the pre-verbal placement is derived by movement to [Spec,AspP], cf. the structure in (3.99). Given this syntax of manner adverbs, the analysis of the internal structure of event nouns and of ACC-*ing*/POSS-*ing* gerunds presented in section 4.1.2 provides a straightforward explanation for the fact that gerunds of these types can occur with pre- and post-modifying manner adverbs (cf. (4.5)), whereas event nominalizations only allow for post-modifying manner adverbs (cf. (4.1) and (4.6)). In particular, it has been shown in section 4.1.2.2 that POSS-*ing* and ACC-*ing* gerunds contain verbal projections up to (and including) AspP and TP, respectively. Thus, manner adverbs can both right-adjoin to the VP in their structure and move from there to [Spec,AspP], which corresponds, respectively, to their post- and pre-gerundive placement.[37] In contrast, since event nouns are nominalizations of bare VPs (cf. section 4.1.2.1), manner adverbs can (right-)adjoin to their VP, which yields the post-nominal placement, but cannot raise to [Spec,AspP] because of its absence, and this explains why event nouns cannot take pre-nominal manner adverbs.[38]

[37]The factors determining the choice between the pre- and post-modifying positions of manner adverbs in gerunds seem to be the same as in sentences, namely, their relative weight and information-structural status. Thus, the examples below demonstrate that light and backgrounded/defocused (i.e., [+L]/[–F]) manner adverbs are required to move to the left in gerunds, as they are in sentences as well (cf. (3.92)–(3.94)). See section 3.3.1 (note fn. 74) for a discussion.

(i) a. John's (??extremely loudly) singing (extremely loudly)
b. John's (loudly) singing a song that had vulgar lyrics (??loudly)

(ii) a. I continue to hear stories about Steve dressing elegantly.
b. ??I continue to hear stories about Steve elegantly dressing.

[38]Thus, I assume that post-nominal manner adverbs adjoin to the VP in the structure of event nominals, and not to the NP, even if the latter possibility is available to them as PPs as well (see section 4.1.1). The reason for this analysis is to keep the set of arguments and adjuncts of the verb constant—the same reason as for not treating *of*-PPs that correspond to direct objects in event nominals as NP-adjuncts.

The gap created by the inability of event nominalizations to take pre-nominal manner adverbs is obviously filled with their adjectival counterparts, which, syntactically, are able to left-adjoin to NP in the structure of event nominals. However, this adjunction is problematic semantically, since manner adjectives, which have been assumed throughout this thesis to denote properties of manners, type $\langle m, t\rangle$, cannot combine with event nominals, which denote properties of events, type $\langle v, t\rangle$, by means of the defined compositional rules.[39] The sections that follow consider two ways in which this mismatch may be resolved, a syntactic one and a semantic one. Thus, on the one hand, we might complicate the syntax by assuming that manner adjectives are in fact not base-generated as adjuncts to the NP in event nominalizations, but rather move there from some other position, in which they enter the semantic composition in a straightforward way. Or, on the other hand, we might complicate the semantics by stating that either the adjective or the noun undergoes a type shift in adjectival manner modification of event nominals in order to ensure successful semantic composition, whereas the syntax stays close to surface structure. Sections 4.1.3.1 and 4.1.3.2 below will thus address these two approaches in turn.

4.1.3.1 AP-movement

One possible way of explaining why manner adjectives can occur as pre-nominal modifiers of deverbal event nouns without producing a semantic clash is to assume that they are not base-generated as their adjuncts and hence do not directly combine with them semantically. More specifically, given that event nouns can take post-nominal manner adverbs (i.e., PPs containing manner APs in their internal structure), pre-nominal manner adjectives may plausibly be analyzed as being generated inside them. An analysis along these lines is attractive insofar as the semantics of manner adjectives as properties of manners stays unchanged across positions. Yet it needs to be clarified in this case what triggers the movement of manner AP out of manner PP and what happens to *–ly*, which is absent in overt syntax.

The factors that could trigger raising of adjectives into the pre-nominal position are likely to be the same as in the case of leftward movement of adverbs, namely, lightness and backgrounding (see section 3.3), which

[39] Note that event nouns being of type $\langle v, t\rangle$ means that nominalizing suffixes which form them merely change the syntactic category of the constituent they apply to, i.e., VP, but do not affect its semantic type.

is suggested by the following facts. First, the pre-nominal position favors relatively light APs; APs made heavy by the presence of complements or adjuncts must appear post-nominally (the so-called head-final constraint, see sections 1.3.3 and 4.2.4 for a discussion). Second, the pre-nominal position has been argued to be backgrounded/non-focused; AP-raising into this position is therefore an adjective-defocusing device (cf., e.g., Cinque, 1993; Lambrecht, 1994; Escribano, 2005). Hence, it may be assumed that relative weight and information-structural status are the relevant factors that govern the choice between a pre-nominal adjective and a post-nominal adverb as a manner modifier of an event noun, similarly to the situation with adverbs in sentences and gerunds.[40,41]

If manner adjectives that appear in the pre-nominal position of event nouns move there from inside post-nominal manner adverbs, the absence of *–ly* in overt syntax when this movement takes place may be explained as following from the nature of *–ly*, given the analysis of it advocated in this thesis. Recall that *–ly* has been analyzed in section 3.1.2.2 in terms of a semantically near-empty dummy noun inserted for grammatical reasons, namely, because English requires that the head nouns of attributive adjectives be overt. Thus, if the manner adjective moves out of the manner PP, where it is generated as an attributive modifier lacking a semantically full head noun, the need for *–ly* to be inserted falls away.

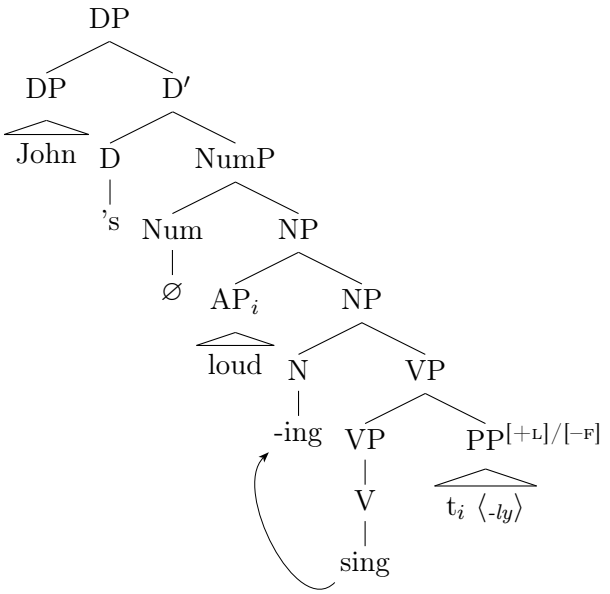
This approach to pre-nominal manner adjectives in event nominalizations is illustrated for *John's loud singing* in (4.42) below. Thus, the post-nominal adverb, which is marked [+L]/[–F], is required to move leftward in order to produce an optimal PF-representation. However, it can move neither to [Spec,AspP], like in sentences and gerunds, since this position is absent in event nouns, nor to the left adjunct position to NP, because

[40] Moreover, it is also argued in Morzycki (2008) that pre-nominal and post-nominal adjectives show the same pattern with respect to *(non-)restrictivity* as pre-verbal and post-verbal adverbs (cf. fn. 74 in section 3.3.1 for a discussion of (non-)restrictivity in manner adverbs). On the availability of restrictive and non-restrictive interpretations with pre- and post-nominal adjectives, cf. also, e.g., Bolinger (1967); Larson & Marušič (2004).

[41] However, (pre-nominal) manner adjectives and (post-nominal) manner adverbs in event nominals display an asymmetry in terms of naturalness and frequency. Whereas pre-nominal manner adjectives are perfectly natural and therefore quite frequent with event nominals, post-nominal manner adverbs are often perceived as stilted or odd in them, in particular when the event nominal is in a non-subject position, and are thus not very common with them (cf., e.g., Fu et al., 2001; Payne et al., 2010). The reason for this asymmetry may be that event nominalizations tend to accept more naturally nominal modifiers, than modifiers of the VP, which is more deeply embedded in their structure, having been converted into a nominal category.

of the head-final constraint. As a result, the manner AP alone raises and left-adjoins to NP, and the fact that it leaves the manner PP also makes it unnecessary for *–ly* to be inserted.[42]

(4.42)



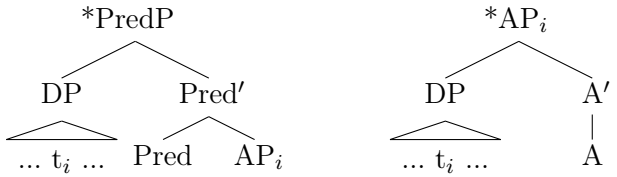
Thus, this analysis complicates the syntax of manner modification of event nouns by pre-nominal manner adjectives, as the latter are assumed to be *generated* in a different position than the one in which they appear in the surface structure, namely, inside manner adverbs modifying event nouns post-nominally. Yet in return it allows a straightforward semantic composition of event nominalizations with manner adjectives, which can now be also *interpreted* inside manner adverbs they move out of. Accordingly, the compositional semantics of, e.g., *loud singing* will not be much different from that of *sing loudly*, computed as shown in section 3.2.1.[43]

[42] Thus, *–ly* is absent in the surface structure of (4.42); '⟨-ly⟩' merely indicates where it would be inserted if AP did not raise.

[43] In saying that manner adjectives are interpreted inside manner adverbs they raise out of, I do not mean that the moved manner AP is necessarily interpreted *in its unmoved position*. It might also be interpreted *at its landing site*, in which case it would still not combine semantically with the event nominal, but rather with the λ-abstract over a variable of type $\langle m, t\rangle$, adjoined right below the landing site, whereas the trace of the same type would be interpreted in the base position (see, e.g., Heim & Kratzer, 1998, 212–213). However, see, e.g., Barss (1986, 1988); Huang (1993); Heycock (1995); M. Landman (2006), who argue that moved property-denoting phrases are obligatorily interpreted in the unmoved position, i.e., obligatorily *reconstruct*. The choice between these two possibilities is not essential for the AP-movement analysis, though.

However, while this analysis is attractive in how it handles *attributive* manner adjectives in event nominals, it is less so with respect to the way it can deal with manner adjectives *predicated* of DPs that contain event nouns, as in *John's singing was loud*.[44] Such DPs, being of type v (or the corresponding quantificational type, e.g., $\langle vt, t\rangle$), cannot combine semantically with predicative manner adjectives, which are of type $\langle m, t\rangle$. But, unlike in the case with attributive manner adjectives, this type mismatch cannot be resolved by movement of AP out of post-nominal manner PP, for the following reasons. If it is assumed that predicative adjectives are complements of Pred (as assumed in this thesis, see section 1.3.2), movement of manner AP into the predicative position would be an instance of disallowed movement to complement position, namely, to [Comp,PredP]. And also if the PredP hypothesis is not followed and subjects of predicative adjectives are, consequently, assumed to be generated AP-internally, i.e., in [Spec,AP], the AP-movement approach to predicative manner adjectives would be equally problematic, because it would imply movement of a maximal projection out of a constituent in its own specifier. Both of these inadmissible syntactic configurations are depicted in (4.43) below.

(4.43)



Given the AP-movement analysis of attributive manner adjectives in event nominals and the impossibility to extend it to predicative manner

[44] An issue that may also cause skepticism about this analysis is the fact that post-nominal manner adverbs, which are often perceived as stilted or odd in event nominals and are thus not very common with them, are supposed to be the derivational source of pre-nominal manner adjectives in event nominals, which are both perfectly natural and frequent with them. However, what matters in this case is the in-principle ability of manner adverbs to occur post-nominally with event nouns, while the preference for pre-nominal manner adjectives may be due to independent factors (cf. fn. 41 above).

Another potential criticism of the AP-movement analysis comes from the fact that it leaves unexplained why *non-deverbal* nouns that can be interpreted as events, such as, e.g., *lunch*, can take pre-nominal manner adjectives (*a quick lunch*), although they do not allow for post-nominal manner adverbs (**a lunch quickly*; cf. (4.2)). However, it has been argued in section 4.1.1 that nouns like *lunch* have only one basic meaning as properties of individuals, while their event interpretation arises as a result of coercion, rather than due to the presence of an event argument in their semantics. If this view is on the right track, manner adjectives with nouns like *lunch* can be given the same analysis as with other individual-denoting nouns, see section 4.2 below.

adjectives, it is natural to assume that the predicative position is derived from the attributive one in this case, since this allows for a more uniform theory. If the predicative position is derived from the attributive one, this implies that the surface deletion of the head noun and of the determiner takes place; accordingly, *John's singing was loud* is the result of a derivation which involves adjective movement and subsequent noun and determiner deletion, as shown below.

(4.44) John's singing was $[_{\text{DP}}$ ~~a~~ loud_i ~~singing~~ $[_{\text{PP}}$ t_i $\langle$-*ly*$\rangle]]$

This analysis of the predicative position further complicates the syntax of manner adjectives in the context of event nominals by introducing deletion operations which are difficult to justify on independent grounds, in order to keep the semantics of manner adjectives constant across positions. The following section discusses a different kind of approach, which allows the syntax of manner adjectives in the context of event nominals to be close to surface structure—at the cost of complicating the semantics.

4.1.3.2 Type shift

An alternative way of explaining how manner adjectives can semantically combine with deverbal event nouns without producing a type clash is to assume that a *type shift* takes place, which makes the semantic composition possible. In particular, there are two logical possibilities in this case, namely, either the manner adjective is type-shifted to denote a property of events in the presence of an event noun, or, conversely, the event noun undergoes a type shift to denote a property of manners. The former possibility of type-shifting manner adjectives to properties of events leaving the denotations of event nouns unchanged appears to be more adequate, because event nominals modified by manner adjectives can still be hosted by "event containers", such as, e.g., *occur*, as in the example below, based on Vendler (1967, 139):

(4.45) John's loud singing of the Marseillaise occurred after midnight.

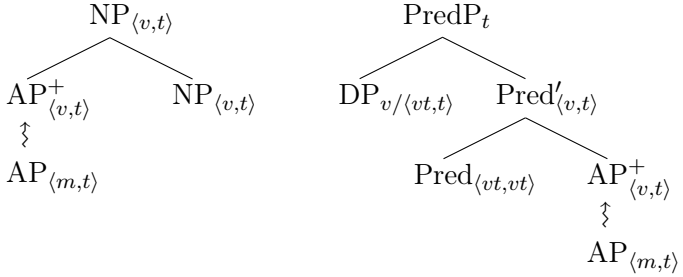
The details of such a type-shifting mechanism may look as follows. It may be assumed that any AP denoting a property of manners **A** of type $\langle m, t\rangle$ can be shifted to AP^{+} of type $\langle v, t\rangle$ whose semantics incorporates **A** and, in addition, contains the manner function as well as an existential quantifier over manners, i.e., those semantic components that are missing in the absence of the P and D heads available in the structure of manner

adverb(ial)s:[45]

(4.46) $\lambda m.\mathbf{A}(m) \rightsquigarrow$ AP
$\lambda e.\exists m\ [\mathbf{A}(m) \wedge \mathbf{manner}(m)(e)]$ AP^{+}

This type shift will be triggered when an AP of type $\langle m, t\rangle$ is either in the (left-)adjunct position to an NP of type $\langle v, t\rangle$, or in the complement position of Pred of type $\langle vt, vt\rangle$, whose specifier is a DP of type v (or of the corresponding quantificational type, such as $\langle vt, t\rangle$), as schematically represented below.

(4.47)



Accordingly, the compositional semantics of, e.g., *loud singing* will be as follows. After being type-shifted to a property of events in accordance with the template in (4.46), the denotation of *loud*$^{+}$ in (4.49) will be able to combine with that of *singing* in (4.48) by Predicate Modification, such that the resulting more complex property of events will be as in (4.50):[46]

(4.48) $[\![\text{singing}]\!] = \lambda e.\mathbf{sing}(e)$

(4.49) $[\![\text{loud}]\!] = \lambda m.\exists d\ [\mathbf{loud}(d)(m) \wedge d \geqslant \mathbf{d}_s] \rightsquigarrow$
$[\![\text{loud}^{+}]\!] = \lambda e.\exists m\ [\mathbf{manner}(m)(e) \wedge \exists d\ [\mathbf{loud}(d)(m) \wedge d \geqslant \mathbf{d}_s]]$

(4.50) $[\![\text{loud}^{+}\ \text{singing}]\!] = \lambda e\ [\mathbf{sing}(e) \wedge \exists m\ [\mathbf{manner}(m)(e)$
$\wedge\ \exists d\ [\mathbf{loud}(d)(m) \wedge d \geqslant \mathbf{d}_s]]]$

Thus, in the positions in which manner adverbs cannot occur for syntactic reasons, while manner adjectives—for semantic reasons (cf. (4.47)),

[45] See Kratzer (1998) for a similar type shift between properties of times and properties of events. Note also that it may be more adequate to type-shift the denotations of manner As, rather than APs. However, since this would involve two sub-cases, namely, for gradable and for non-gradable manner adjectives (in the former case the type shift would be from type $\langle d, mt\rangle$ denotations to type $\langle d, vt\rangle$ denotations), I assume for simplicity that the type shift under consideration operates on AP denotations.

[46] I set aside the question of how *of*-complements of event nouns are introduced semantically assuming for simplicity that *singing* denotes the one-place predicate **sing**.

the type shift in (4.46) assigns to manner adjectives the semantics of manner adverbs, making them suitable for these positions both syntactically and semantically.

Compared to the analysis in terms of AP-movement discussed earlier in section 4.1.3.1, the type-shift analysis is attractive insofar as it is able to account for the semantic composition of attributive manner adjectives with event nominals as well as of predicative manner adjectives with DPs that contain event nominals without complicating the underlying syntax, which stays close to surface structure.[47] Yet, this advantage comes at the cost of not having a uniform semantics for manner adjectives across their uses, as they are assumed to denote properties of manners in the context of manner nominals (including in the structure of adverbs) and properties of events in the context of event nominals, the latter as a result of a type shift. Furthermore, type-shifting is a powerful but dangerous tool, which can repair semantic mismatches in a way that is not motivated independently. Thus, the question is whether the type shift that maps properties of manners to properties of events has an independent motivation, different from the theory-internal need to treat manner adjectives as being of the "right" semantic type when combined with event nouns. In what follows, I will discuss the interpretation of *how*-clauses embedded under verbs of perception, which would seem to independently justify this type shift.

In English, and more frequently in languages like German or Russian, *how*-CPs which serve as complements to verbs of perception can exhibit an ambiguity that has largely escaped attention in the literature. In particular, in addition to the expected manner reading, they may also have the event reading that is otherwise normally conveyed by bare infinitives or gerunds with verbs of perception, as the examples below illustrate.[48]

[47] Type-shifted manner APs will also be able to combine in a semantically straightforward way with *non-deverbal* nouns that can be interpreted as events, such as, e.g., *lunch*, if the latter are analyzed as denoting properties of events (cf. fn. 44 above).

[48] The event reading with *how*-CPs is much more natural and frequent in languages like German and Russian than in English, cf. the examples below.

(i) a. Ich sah, wie sie in den Zug einstieg. *German*
I saw how she in the train got.on

b. Ja videl, kak ona sela v pojezd. *Russian*
I saw how she sat in train
'I saw her get on the train.'/'I saw how she got on the train.'

This fact is possibly due to the existence in English of a dedicated construction for the event reading with verbs of perception (bare infinitives or gerunds), while Russian lacks it, and in German it is getting out of use (verbs of perception with infinitives).

(4.51) I saw how you got frustrated while reading this book.
∼ 'I saw the way you got frustrated while reading this book.'
∼ 'I saw you get frustrated while reading this book.'

(4.52) Ed saw how Al got on the train.
∼ 'Ed saw the way Al got on the train.'
∼ 'Ed saw Al get on the train.'

The expected, though not very plausible, manner readings of the examples above are perception reports of the manners in which the events described in the *how*-clauses unfolded. Thus, e.g., in (4.52), this reading implies that Ed saw the particular way Al got on the train, say, jumping on it when it was already moving. But these examples may also be interpreted in a different way, which is perhaps more salient for them, namely, as perception reports of the events themselves. On this reading of (4.52), Ed saw Al get on the train; the way it happened is not in focus.

It should also be pointed out in this connection that *wh*-clauses with *wh*-pronouns other than *how* embedded under verbs of perception do not exhibit an analogous ambiguity. For instance, the *where*-CP in (4.53) below does not have an event reading in addition to its location reading:

(4.53) Ed saw where Al got on the train.

The fact that *how*-CPs embedded under verbs of perception can have an event reading may be taken as evidence that there is a special relation between events and manners (but not other 'participants' of events, such as locations). More specifically, their event reading may be analyzed as a result of another instance of type-shifting of manner-denoting expressions to events, which could justify the introduction of a type shift from properties of manners to properties of events in manner adjectives.

However, the event reading of *how*-CPs with verbs of perception need not necessarily be analyzed as the result of a type-shifting rule from manners to events. It can alternatively be argued to emerge as an implication, since witnessing the way in which an event unfolds implies witnessing the event itself. In other words, it may also be assumed that there is indeed a special relation between events and manners, but only insofar as manners do not exist independently of their events, unlike such event participants as locations.[49] Note also in this connection that the semantics of manner modification assumed in this thesis does not ensure this implication as a logical entailment, cf. the simplified representation of (4.52) in (4.54) be-

[49] Not having seen the event itself, one can still see its location at some different time.

low.[50] Yet, a discussion of whether to encode the ontological dependence of manners on events in the semantics would take us too far afield.[51]

(4.54) $\exists e\ [\mathbf{see}(\iota m.\exists e'\ [\mathbf{get\text{-}on}(\iota x.\mathbf{train}(x))(e') \wedge \mathbf{manner}(m)(e') \wedge \mathbf{agent}(\mathbf{al})(e') \wedge \mathbf{past}(e')])(e) \wedge \mathbf{experiencer}(\mathbf{ed})(e) \wedge \mathbf{past}(e)]$

Let us sum up. If the considerations above are on the right track, the availability of the event reading with *how*-CPs embedded under verbs of perception cannot be taken in support of the type-shift analysis of manner adjectives in the context of event nouns. Given that no independent motivation thus seems to be available for the type-shift analysis, the AP-movement analysis in section 4.1.3.1 is the preferable alternative, because it does not require additional stipulations (movement of light/unfocused constituents has been independently assumed in the case of adverbs). In section 4.2 below, we will now turn to the discussion of manner adjectives in the context of individual nouns, and the choice between AP-movement and type-shifting will be addressed anew in the light of further data.

4.2 Individual nouns

4.2.1 Semantics of *at/in*-gerunds as source of event

The semantic composition of attributive manner adjectives with individual nouns (cf. *skillful teacher*) and of predicative manner adjectives with DPs containing individual nouns (cf. *That teacher is skillful*) is even less straightforward than the semantic composition of manner adjectives with event nouns; recall in this connection Vendler's (1968) idea that manner adjectives are primarily suited for event nominals and only indirectly for "ordinary" nouns (see the discussion in section 2.2.1). Within the semantics of manner modification assumed in this thesis, this is so because not only is it not clear what introduces the manner function and the manner quantifier in the case of individual nouns, but it is also unclear where the relevant event comes from (for arguments that an implicit event is indeed

[50] The fact that existential quantification over events of getting on the train in (4.54) is in the ι-term that is the theme of **see** does not ensure that this event has been seen. Note that I assume that the free relative clause in (4.52) denotes an ι-term; ι may be contributed by a null D head or a silent operator above CP (Caponigro, 2002, 2003).

[51] It may be argued that the ontological dependence of manners on events is itself a reason to assume a type shift from manners to events; however, it is not obvious why this should be so. Also, it is not clear if *how*-clauses need to be type-shifted to events at all, given that the relevant event is already present in their semantics, cf. (4.54).

present in adjectival manner modification of individual nouns, see section 2.2.1). In section 2.2.2.3, it has been discussed at length that the relevant event cannot be contributed by the semantics of the head noun, because, differently from event nominalizations, individual-denoting nouns either contain no event variable in their semantics at all, or this event variable is inaccessible to manner adjectives. In what follows, I will thus first briefly recapitulate the argumentation from section 2.2.2.3 and will then proceed to discuss possible alternative sources of the event that is implicitly present in manner modification of individual nouns.

Existing analyses of (attributive) manner adjectives as manner modifiers of the event provided by the semantics of the head noun (cf. Larson, 1998; Egg, 2008; Winter & Zwarts, 2012) mainly consider *deverbal* individual nouns formed by means of the suffix *–er*, such as *dancer*, because the presence of an event variable in their semantics is easy to justify—it follows from the presence of verbal layers in the internal structure of *–er* nominalizations; more specifically, this event variable corresponds to the event argument of their base verbs. However, even in the case of deverbal individual-denoting nouns, an analysis according to which manner adjectives are predicated of the event variable in their semantics is difficult to maintain under standard syntactic and semantic assumptions, as argued in section 2.2.2.3. In particular, for the event argument of the base verbs of *–er* nouns to be accessible to manner adjectives, it has to be assumed either that adjectives are not exclusively nominal modifiers, but can also modify verbal projections, such that manner adjectives can adjoin to the VP in the structure of *–er* nouns, cf. (2.50) from Egg (2008), or that the event argument of the base verb is not closed off by *–er*, but by a higher null head in the structure of *–er* nouns, such that manner adjectives can access the event argument adjoining to the nominal projection headed by *–er*, cf. (2.54) from Winter & Zwarts (2012). Thus, if these non-standard assumptions are not made, deverbal individual nouns do not in fact present a more straightforward case with respect to modification by manner adjectives than non-deverbal ones, since the event argument of their base verbs is no longer open at the level of the nominal projection headed by the nominalizing suffix, which manner adjectives can adjoin to.[52]

Non-deverbal individual nouns can be modified by manner adjectives as well, as examples like *just king*, *fast horse*, *good father*, *careful scientist*, etc. show. But even the presence of an event variable in the semantics of

[52]For a discussion of the morphosyntactic structure and the internal compositional semantics of *–er* nouns under the assumptions made in this thesis, see section 4.2.4.2.

such nouns (let alone its accessibility to manner adjectives) is difficult to motivate in view of their non-deverbal nature and, therefore, their lack of verbal structure. Still, some semantic frameworks, such as, for instance, Pustejovsky's (1995) Generative Lexicon theory (section 2.2.2.3), simply stipulate that the semantic structure of individual-denoting nouns, both deverbal and non-deverbal ones, contains one or several event arguments with no morphosyntactic correlate, which encode the function of the object and/or the way it came into existence. However, in addition to being ad hoc, this approach is also problematic for a number of reasons. First, since the event predicates which specify the functions of objects and the modes of their coming into existence are fixed in the semantics of nouns, the fact that the interpretation of individual-denoting nouns modified by manner adjectives is subject to contextual variability (cf. section 2.1.3.2) remains unaccounted for. Thus, the only reading of, e.g., the phrase *good lutist* that can be modeled in the Generative Lexicon framework is 'lutist who is good at playing the lute'—contextually determined readings, such as, for instance, 'lutist who is good at playing chess' discussed by Beesley (1982), cannot. Similarly, the range of interpretations of *fast horse* (such as 'horse that runs fast', 'horse that works fast', 'horse that learns fast', and so on, see section 2.1.3.2) cannot be accounted for either. Second, in the case of non-deverbal individual-denoting nominals, it is often unclear which events should be associated with their referents and thus specified in the qualia structure; this concerns, for example, natural kinds such as horse. Hence, it is not clear whether the Generative Lexicon can account even for one interpretation of *fast horse*, as events like running, working, learning, etc. are neither the function/purpose of horses nor the mode of their coming into existence.[53]

Thus, the implicit event present in the semantics of adjectival manner modification in the context of individual nouns must be introduced somewhere else than in the semantics of the modified noun. In this situation, it is possible that the source of this event has no syntactic correlate, i.e., that this event is introduced only at the level of logical form, or, alternatively, that it is contributed by the semantics of some syntactic constituent. As far as the former possibility is concerned, manner adjectives may

[53] A further disadvantage of the analysis according to which the event necessary for adjectival manner modification in the context of individual nouns is introduced in the semantics of the modified noun is the fact that it implies a complication of the syntax of the *predicative* position. Specifically, manner adjectives that are predicated of DPs containing an individual-denoting nominal must be analyzed as attributive adjectives with a silent head noun, whose presence is necessary as the source of an event.

simply be assumed to undergo a type shift to properties of individuals in the context of individual-denoting nouns such that a contextually salient event is introduced into the logical form as a result of this type shift. For example, a manner AP denoting a property of manners **A** may be type-shifted to denote the set of individuals that participate in some thematic role **Θ** in a contextually determined event **E** which unfolds in a manner described by **A**. The denotation of the resulting type-shifted AP^{++} will, thus, be as represented below:

(4.55) $\lambda m.\mathbf{A}(m) \rightsquigarrow$ AP
$\lambda x.\exists e \exists m\ [\mathbf{A}(m) \wedge \mathbf{manner}(m)(e) \wedge \mathbf{E}(e) \wedge \mathbf{\Theta}(x)(e)]$ AP^{++}

Manner APs type-shifted to properties of individuals in this way can straightforwardly combine with individual-denoting nouns and with DPs containing them without producing a type clash. Furthermore, due to the presence of an additional implicit event argument, the analysis in terms of the type shift above also accounts for the fact that manner adjectives give rise to substitution failure with co-extensive nouns (see the discussion in section 2.1.1), as the contextually relevant event introduced in the course of this type shift can vary from context to context. However, this kind of analysis is not very appealing on general theoretical grounds. Specifically, the fact that the implicit event whose manner is specified by the manner adjective is introduced exclusively at the level of logical form as a result of a type shift, rather than in the course of syntactically driven semantic composition, implies a departure from the assumption of the existence of a homomorphism between syntax and semantics, making the analysis ad hoc in terms of the syntax–semantics mapping. Moreover, the type shift from properties of manners to properties of individuals in (4.55) seems to be even less independently motivated than the type shift from properties of manners to properties of events, which was discussed in section 4.1.3, cf. (4.46). While there is a special relation between manners and events, insofar as manners do not exist independently of their events, which may be taken as a justification for postulating a type-shifting rule from properties of manners to properties of events, no such relation exists between manners and individuals. In this sense, the analysis in terms of the type-shifting rule in (4.55) is not much more than a formal description of the problem, as the semantics it assigns to manner adjectives occurring with individual-denoting nominals does not converge with or follow from any other properties of them, being motivated exclusively by theory-internal considerations. By contrast, an analysis according to which the necessary

event is introduced in the semantics of some syntactic constituent would maintain the syntax–semantics homomorphism, avoiding the stipulativeness of a type shift. In what follows, I will show that it is possible to give an analysis along these lines, such that it produces a logical form similar to that in (4.55) in a compositional way.

If the implicit event in adjectival manner modification with individual nouns is to be looked for in the semantic structure of some syntactic constituent (other than the modified noun), there are two constructions that systematically occur with manner adjectives in the context of individual nouns and thus come into question as the source of the event: *as*-phrases (*skillful as a teacher*) and *at/in*-gerunds (*skillful at/in teaching*), already considered in sections 2.1.3.1, 2.1.3.2 and 2.2.1, 2.2.2.1, respectively. The former construction does not seem to be a promising candidate, however, since the complements of *as*-phrases are DPs containing individual nouns and hence the attempt to derive from their semantics an event accessible to manner adjectives will face similar problems as the attempt to derive it from the semantics of the modified nouns discussed above in this section.

By contrast, there are several reasons to suppose that *at/in*-gerunds are precisely the syntactic constituent that contributes the implicit event in adjectival manner modification with individual-denoting nouns. First, discussing the morphosyntactic structure of such gerunds in section 4.2.2 to follow, we will see that, being deverbal formations, they project up to VoiceP, at the level of which the event argument of the base verb is still open and hence accessible to manner adjectives.[54] Moreover, we will see in sections 4.2.3 and 4.2.4 that by incorporating the semantics of *at/in*-gerunds into the semantic composition of adjectival manner modification in the context of individual nouns we will derive in a compositional way the desired logical form similar to that represented in (4.55). Second, the contextual variability of the relevant event, discussed above, is no longer possible when prepositional gerunds of this type are overtly present with manner adjectives: The event whose manner is specified by the adjective can only be the one provided by the semantics of the gerund in this case (see also the discussion in section 2.2.1), which strongly suggests that it

[54]It should be pointed out that the complements of *at/in*-PPs may sometimes also be non-gerundive, as, e.g., in *good at mathematics*. I assume that such *at/in*-PPs still contain an implicit event (*good at doing mathematics*), being similar in this respect to phrases like *begin the book*, which have been argued to contain an event that either is present only semantically—as a part of the noun semantics or as the result of coercion (Pustejovsky, 1995; Jackendoff, 1997; Asher, 2011) or is introduced by a syntactically present null V (de Almeida & Dwivedi, 2008; see also Pylkkänen & McElree, 2006).

is the gerund that is the source of the relevant event. Finally, third, such gerunds are subcategorized by manner adjectives solely in the context of individual nouns; in the context of event nominals, by contrast, they are infelicitous with manner adjectives, as the examples in (4.57) show. This fact follows if the role of *at*/*in*-gerunds is to provide an event for manner modification, since in the presence of an event nominal the relevant event is already provided by its semantics (cf. section 4.1.3) and hence there is no need for a gerund.[55]

(4.56) a. John is skillful (at engaging students).
b. John was careful (in overtaking).

(4.57) a. John's teaching is skillful (*at engaging students).
b. John's driving was careful (*in overtaking).

In view of these considerations, I will therefore assume that the event in adjectival manner modification with individual-denoting nouns is contributed by the semantics of gerundive *at*/*in*-PPs illustrated above, thus following Croft (1984) in this respect (cf. section 2.2.2.1). And since such PPs do not always occur with manner adjectives explicitly, this assumption implies that they are present in the underlying structure even when they are absent in the surface syntax, cf. (4.58) below. In such cases, the covert gerund is determined by the context; thus, in the examples below, the contextually salient events which are subject to manner modification are the events of teaching math and running.[56]

(4.58) a. John is skillful ~~in teaching math~~.
b. This horse is fast ~~at running~~.

[55]The pattern in (4.56)–(4.57) is somewhat similar to a pattern discussed in Pesetsky (1995, 64–67), cf. one of his examples below:

(i) a. John was careful (with the electrodes).
b. John's manner was careful (*with the electrodes).

However, unlike in (4.57), the subject DP in (ib) does not contain an event nominal and the PP is not eventive either; hence, the explanation in terms of events, assumed for (4.57) above, cannot hold for (ib). Rather, the infelicity of examples like (ib) might have to do with PPs such as *with the electrodes* being only licit with agentive subjects, and this might also be the reason of the infelicity of *as*-phrases in the context of event nouns, cf. **John's playing of the lute is skillful as a musician.*

[56]In this sense, the question of the syntactic presence of non-overt *at*/*in*-gerunds is reminiscent of the analogous question in the case of *for*-PPs introducing the comparison class with gradable adjectives (see, e.g., Solt, 2011, and references therein).

Hence, an analysis based on the assumption that the implicit event is contributed by the semantics of (overt or deleted) *at*/*in*-gerunds straightforwardly accounts for the fact of contextual variability of the event when the gerund is non-overt. Moreover, it does not face the problems that are faced by the analyses which derive the relevant event from the semantics of the modified nouns, viz., the bracketing paradox with deverbal nouns, the source of the event in non-deverbal nouns, and the predicative use of manner adjectives. The following sections present an analysis along these lines. Section 4.2.2 discusses the internal structure of *at*/*in*-gerunds and, based on it, sections 4.2.3 and 4.2.4 provide the syntax and the compositional semantics of manner modification with predicative and attributive manner adjectives in the context of individual nouns.

4.2.2 Internal structure of *at*/*in*-gerunds

Employing some of the diagnostics introduced in section 4.1.2 in connection with deverbal event nouns and POSS-*ing*/ACC-*ing* gerunds, we will see in this section that the structure of *at*/*in*-gerunds selected by manner adjectives in the context of individual-denoting nouns contains no verbal functional projections higher than VoiceP and lacks nominal layers altogether. Hence, in this sense, these gerunds are a variety of what is called "TP-defective gerunds" in Pires (2006), on a par with gerunds introduced by aspectual verbs (*start*, *finish*, *continue*, etc.) and verbs such as *try* and *avoid*, discussed in his work.

Let us start with verbal projections of *at*/*in*-gerunds first, proceeding top-down. As already stated in section 4.1.2.2 above, the lack of **CP** has been argued by Stowell (1982) to be a general property of gerunds, based on the fact that they do not take complementizers and do not allow short *wh*-movement to [Spec,CP], which forms indirect questions, unlike (some types of) infinitives, see the examples in (4.35)–(4.36) and (4.37)–(4.38). This property also holds for *at*/*in*-gerunds selected by manner adjectives; the examples below show that they cannot be introduced by the complementizers *for* and *that* and cannot occur as indirect questions:

(4.59) John is skillful in [(*for Bill/*that) teaching math].

(4.60) *John isn't skillful in [what$_i$ teaching t$_i$].

Further, several facts suggest that such gerunds do not project a **TP** either. First, they do not allow overt subjects, as demonstrated in (4.61); this fact follows if the [Spec,TP] position, in which the subject can check

Case, is not available in their structure.

(4.61) *John is skillful in [(for) Bill teaching math].

Second, such gerunds do not take sentential adverbs, which are standardly analyzed as TP-modifiers:

(4.62) a. *John is skillful in [*probably* teaching math].
b. *John was careful in [*fortunately* driving].

Third, a further potential argument for the absence of a TP in *at/in*-gerunds has to do with the licensing of temporal adverbials. Pires (2006) shows that gerunds differ with respect to the possibility of having a temporal interpretation distinct from that of the matrix clause, as evidenced by their (in)ability to take their own temporal adverbials, cf. (4.63) from Pires (2006, 71). He assumes that the impossibility of temporal modification of the embedded event indicates that the gerund has no independent tense specification, being parasitic on the matrix tense (cf. Wurmbrand, 1998, 51ff.), and argues that this fact follows if this gerund lacks the TP-domain. If Pires' argument is on the right track, it holds also for gerunds subcategorized by manner adjectives, because they cannot take temporal adverbials which are different from the ones in the matrix clause, as the example in (4.64) demonstrates.

(4.63) a. *Bill tried *today* [talking to his boss *tomorrow*].
b. Mary worried *yesterday* about [coming to dinner *tonight*].

(4.64) *John was skillful *today* at [parking his car *tomorrow*].

Finally, the fact that *at/in*-gerunds do not allow aspectual auxiliaries, illustrated in (4.65) below, implies that also **AspP** and **PerfP** are absent in the structure of these gerunds.[57,58]

[57] Interestingly, however, such gerunds are compatible with modals and verbal negation, as the examples below show:

(i) a. John is very good at [being able to lie to himself].
b. John is skillful at [not answering questions].

This fact seems to indicate that they contain ModP and NegP, which is surprising, given their lack of the AspP and PerfP layers located lower, and requires an explanation.

[58] The inability of the progressive auxiliary *be* to occur in *at/in*-gerunds also follows from the fact that two *–ing*-inflected verb forms are not allowed to be adjacent (Ross' (1972) Doubl-ing Constraint; see the discussion in section 4.1.2.2).

(4.65) a. *John was careful in [having parked his car].
b. *This horse was very fast today at [being running].

By contrast, a **VoiceP** projection must be present in the structure of *at*/*in*-gerunds, since their direct objects are assigned accusative Case (cf. *skillful in teaching math*, *careful in parking the car*, etc. in the examples above). Moreover, it must have an active Voice head, as non-active Voice heads cannot assign Case to the internal argument (cf. section 1.3.1).

VoiceP is, thus, the highest verbal functional projection that is available in *at*/*in*-gerunds. This implies that the event argument of their base verbs is still open at this level and hence accessible to manner adjectives, not being embedded under higher verbal or, as we will see later, nominal projections that would close it off. Furthermore, this composition of projections in the internal structure of *at*/*in*-gerunds has important implications for the overall syntax of manner adjectives that license them, which will be the topic of the remainder of this section.

The presence in *at*/*in*-gerunds of an active Voice head, which is able to assign accusative Case to the internal argument, implies, according to Burzio's generalization, that it must also license the external argument in its specifier. The external argument cannot receive Case in the [Spec,TP] position of the gerund, though, since *at*/*in*-gerunds lack the TP-domain, as has been shown above. Moreover, there are, in fact, no Case-assigning positions inside the gerund at all that would be available to the external argument. For this reason, it must find a Case-assigning position outside the gerund, i.e., in the matrix clause, which, however, has only one position in which Case could be checked, namely, the subject position of the (predicate) manner adjective. We thus seem to be forced to assume that individual-denoting subjects of predicate manner adjectives are actually base-generated in the embedded [Spec,VoiceP] position of *at*/*in*-gerunds, from where they undergo A-movement to the matrix [Spec,TP] position for reasons of Case. Below we will see that, in fact, this assumption also accords with some other facts.

Thus, *at*/*in*-gerunds must project an external argument, which, however, cannot be realized as their subject due to their lack of a [Spec,TP] position, in which the external argument could be assigned Case. Indeed, examples such as the one in (4.61) show that *at*/*in*-gerunds do not allow *overt* subjects. Note, though, that it might be argued in this connection that these gerunds can still have a *null* subject realized as a PRO, which is controlled by the matrix subject. However, this would imply that PRO may stay in its base [Spec,VoiceP] position without being assigned Case,

contrary to the widely held assumption that not only overt subjects, but also PRO must check Case in [Spec,TP], namely, null Case (cf. Chomsky & Lasnik, 1993; Martin, 2001). The external argument of *at*/*in*-gerunds can thus not be a PRO, which leaves us with the only possibility that it moves out of the gerund.

Furthermore, the implicit external argument of *at*/*in*-gerunds is subject to *obligatory control*. Thus, e.g., in the example in (4.66) below, the agent of shaving must intuitively be John. More technically, the implicit external argument of these gerunds displays a range of specific properties which are associated with obligatory control. In particular, it requires an antecedent (see (4.67a)); its antecedent must c-command it (see (4.67b)) and be local (see (4.67c)); it cannot have split antecedents (see (4.67d)); and it only permits a sloppy interpretation under ellipsis (see (4.67e)).[59] Note that it is precisely obligatory control (as opposed to non-obligatory control) for which it has been argued at length that it can and should be analyzed as resulting from A-movement of the controller DP (Hornstein, 1999, 2001, and subsequent work). Hence, the arguments for the control-as-movement approach carry over to the analysis of the implicit external argument of *at*/*in*-gerunds in terms of raising.

(4.66) John$_i$ is skillful at [$e_{i/*j}$ shaving himself].

(4.67) a. *John$_i$ is skillful at [e_j shaving himself].
b. *John$_i$'s friend is skillful at [e_i shaving himself].
c. *John$_i$ thinks that Bill$_j$ is skillful at [e_i shaving himself].
d. *John$_i$ considers Bill$_j$ skillful at [e_{i+j} shaving themselves/ each other].
e. John$_i$ is skillful at [e_i shaving himself] and Bill$_j$ is too.
... and Bill$_j$ is skillful at [e_j shaving himself].
... *and Bill$_j$ is skillful at [e_i shaving himself].

Finally, the raising analysis of (individual-denoting) subjects of predicative manner adjectives accords with the fact that they cannot combine with each other semantically, given that manner adjectives denote properties of manners, as assumed throughout this thesis (or are type-shifted to properties of events, as has been discussed in section 4.1.3.2). In particular, if the surface subjects of manner adjectives are base-generated in the [Spec,VoiceP] position of *at*/*in*-gerunds, they can enter the semantic

[59] The properties illustrated in (4.67a)–(4.67e) have first been presented in Lebeaux (1985). See Hornstein (1999, 2001) for a discussion of these and some further properties of obligatory control.

composition in this position, without having a thematic relation with the matrix adjective. In this sense, manner adjectives pattern with what has traditionally been considered as raising predicates, which do not assign a θ-role to their subjects, such as *seem* and *likely*, rather than with control predicates reanalyzed in terms of raising.[60]

Thus, in view of these considerations, individual-denoting subjects of predicative manner adjectives will be analyzed as being generated in the [Spec,VoiceP] position of *at*/*in*-gerunds, from where they raise to matrix subject position for reasons of Case, as (4.68) shows (see Pires, 2006, for an analogous treatment of TP-defective gerunds introduced by verbs like

[60]However, in some other respects, manner adjectives do not behave like canonical raising predicates (for an overview of the diagnostics used to distinguish between control and raising, see, e.g., Davies & Dubinsky (2004)). For instance, they do not allow expletive subjects, unlike, e.g., *easy*-type adjectives:

(i) *It is skillful in [((for) John) teaching math].

(ii) a. This book is easy [to read].
b. It is easy [to read this book].

This fact need not be interpreted as evidence that manner adjectives θ-mark their subjects, though. Given the argumentation above, the matrix subject position cannot be filled with an expletive because the external argument of *at*/*in*-gerunds must raise to this position in order to check Case in it in the absence of an embedded [Spec,TP].

Furthermore, sentences that contain a predicative manner adjective with a passive *at*/*in*-gerund are not synonymous with their counterparts containing an active *at*/*in*-gerund or are not felicitous at all due to a violation of selectional restrictions, as the examples below show, which is typical of control.

(iii) a. John is skillful at [fooling Bill].
b. Bill is skillful at [being fooled by John].

(iv) a. John was careful in [parking the car].
b. #The car was careful in [being parked by John].

These data do not argue against the raising analysis of the subjects of manner adjectives as such, given the possibility of the control-as-movement approach. However, they may be taken to suggest that (agent-oriented) manner adjectives do in fact enter into a thematic relation with their surface subjects, either directly, in virtue of having an additional individual argument slot for them, or mediated by Pred, given that it is present (both possibilities presuppose that double θ-role assignment is allowed). This issue will be left for future research; however, see section 4.2.3.1 below, and especially fn. 64, for some discussion. (Note that the intuition that, in the end, it is John himself who is skillful/careful in (iii) and (iv) is not an argument that these adjectives θ-mark their subjects. In fact, a similar intuition holds also for *easy*-type adjectives—it is in a sense the book itself that is easy in (iia), yet it is not possible that they θ-mark their subjects, since the latter may be expletives, as in (iib), which cannot have a θ-role.)

try and *avoid*). And in the case of covert *at*/*in*-gerunds, the gerund gets deleted after movement of its external argument has taken place.

(4.68) John$_i$ is skillful in [$_{\text{VoiceP}}$ t$_i$ teaching math].

Before concluding this section, let us also briefly discuss whether any nominal projections are available in the structure of *at*/*in*-gerunds. The examples in (4.69) show that these gerunds are incompatible with adjectival modifiers, do not form plurals, and cannot take determiners, which, thus, suggests that NP, NumP, and DP are absent in their structure.[61]

(4.69) a. John is skillful in [(*effective) teaching math (effectively)].
b. *John is skillful in [teachings math].
c. *John is skillful in [a/the/his teaching math].

Finally, given the absence of an NP in the structure of *at*/*in*-gerunds, the suffix *–ing* in them cannot be a nominalizing morpheme; neither can it be an aspectual or an inflectional head, since AspP and TP are absent as well. Therefore, *–ing* in this type of gerunds will be analyzed not as a syntactic head, but rather as a 'dissociated morpheme', which is inserted post-syntactically in order to ensure morphological well-formedness, that is, it will be analyzed in the same way as *–ing* in POSS-*ing* and ACC-*ing* gerunds (cf. section 4.1.2.2).[62] More specifically, the reason why *–ing* gets inserted in *at*/*in*-gerunds is that the Infl feature of V remains unchecked because T, which is responsible for valuing this feature, is absent.

Having discussed the internal structure of *at*/*in*-gerunds, which have been argued earlier to play the important role of being the source of the event, let us now spell out the syntax and the compositional semantics of

[61] Note in this connection that *at*/*in*-gerunds do not allow adjectival pre-modifiers, but can take adverbial ones, as the following example demonstrates:

(i) John is skillful in [*quickly* adapting to changes].

The pre-gerundive placement of *quickly* cannot correspond to the [Spec,AspP] position (which is not present in *at*/*in*-gerunds), as it has been assumed for pre-modifying adverbs in sentences and in POSS-*ing*/ACC-*ing* gerunds (cf. sections 3.3.2 and 4.1.3). Given that V raises to Voice in *at*/*in*-gerunds, this placement of *quickly* can only correspond to left-adjunction to VoiceP (or Voice′), contrary to the assumption made in section 3.3.2 that left-adjunction to VP and VoiceP is disallowed because of the head-final constraint. Therefore, it is possible that the head-final constraint does not apply to modifiers of *functional* projections and so left-adjunction to VoiceP is allowed (see Ernst (2002), who rules out left-adjunction to lexical but not functional projections).

[62] Note that an alternative analysis of *–ing* in *at*/*in*-gerunds in terms of a syntactic head does not seem to be possible.

manner modification with manner adjectives in the context of individual nouns. In section 4.2.3, we will thus first consider predicative manner adjectives, and afterwards section 4.2.4 will proceed with manner adjectives used attributively, which will be argued to have a predicative source too.

4.2.3 Predicative position

4.2.3.1 Derivation with type-shifted manner AP

In order to provide an analysis of the syntax of manner adjectives predicated of DPs that contain individual-denoting nouns, two questions that have not been discussed so far need to be addressed, viz., whether *at*/*in*-gerunds selected by manner adjectives are their complements or adjuncts and whether a PredP is present in clauses containing predicative manner adjectives (as it is the case in regular non-verbal predication, see section 1.3.2), despite the fact that their subjects would not be generated in the [Spec,PredP] position. Let us start with the former question first.

The argument vs. adjunct status of *at*/*in*-gerunds appears not to be straightforward to determine (for an overview of the tests for argumenthood and adjuncthood, see, e.g., Schütze, 1995). On the one hand, their (syntactic) optionality and their ability to follow a modifier, as in (4.70), suggest that they are adjuncts, although the latter fact may be an issue of weight, see the discussion in section 3.3. On the other hand, however, their head-dependence and non-iterativity (see (4.71)) suggest that they are arguments (although their non-iterativity may have semantic reasons insofar as the event in adjectival manner modification, which is provided by *at*/*in*-gerunds, can be specified only once; see also section 4.2.1 for a related discussion in connection with the data in (4.57)).

(4.70) John was skillful *today* at parking his car.

(4.71) *John is skillful at teaching math at engaging students.

Another argumenthood/adjuncthood diagnostic concerns the acceptability of extraction: *wh*-extraction from complements is generally better than that from non-complements (i.e., subjects and adjuncts), the latter being constrained by the Condition on Extraction Domain (CED; Huang, 1982). The data in (4.72)–(4.73) below show that extraction from *at*/*in*-gerunds is as good as extraction from infinitives of *eager*-type adjectives, which are generally believed to be complements (cf. Stowell, 1991). Thus, these gerunds seem not to be extraction islands, which suggests that they

are not adjuncts of manner adjectives, but rather their complements.

(4.72) a. [Which type of car]$_i$ is John eager [to drive t$_i$]?
b. Who$_i$ was John eager [to explain our idea to t$_i$]?
c. [To whom]$_i$ was John eager [to explain our idea t$_i$]?
d. Where$_i$ was John eager [to park his car t$_i$]?

(4.73) a. [Which type of car]$_i$ is John skillful [at driving t$_i$]?
b. Who$_i$ was John skillful [at explaining our idea to t$_i$]?
c. [To whom]$_i$ was John skillful [at explaining our idea t$_i$]?
d. Where$_i$ was John skillful [at parking his car t$_i$]?

However, if gerundive *at*/*in*-PPs are complements, and not adjuncts, of manner adjectives, their behavior with respect to pied-piping remains unexplained; let us see this in some more detail. When an AP is fronted in *wh*-questions and exclamatives, a true complement of A can either be pied-piped with the AP or be stranded in the VP, as the examples below from Stowell (1991, 124) demonstrate:

(4.74) a. **How anxious to leave town** do you think Bill is?
b. **How anxious** do you think Bill is **to leave town**?

(4.75) a. **How proud of his son** Sam is!
b. **How proud** Sam is **of his son**!

Stowell assumes that in both cases these infinitival and prepositional complements have to move together with the adjective when the AP gets fronted because they are generated AP-internally. The stranded variants, as in (4.74b) and (4.75b), result then, according to him, from further optional rightward movement (extraposition) of the complement out of the fronted AP.

Prepositional gerunds introduced by manner adjectives behave differently in this respect. When AP undergoes *wh*-fronting, the *at*/*in*-gerund cannot be pied-piped, but has to stay in the VP:

(4.76) a. ?***How skillful at parking his car** was John?
b. **How skillful** was John **at parking his car**?

(4.77) a. ?***How skillful at parking his car** John was!
b. **How skillful** John was **at parking his car**!

The fact that *at*/*in*-gerunds resist pied-piping is difficult to explain if they are complements of manner adjectives. Specifically, it is not clear in this case how they could be left behind in the VP and not move together

with the rest of the AP or—if they do get pied-piped—what makes their subsequent extraposition obligatory. For this reason, I will, thus, assume that *at*/*in*-gerunds are external to manner AP, i.e., are adjuncts and not complements, and that their stranding, like in (4.76b) and (4.77b) above, corresponds to their base-generated rather than extraposed position (cf., e.g., Stowell, 1991; Hornstein, 2001; Kertz, 2006, for the same conclusion with respect to infinitives of *stupid*-type and *easy*-type adjectives).[63]

Let us now briefly discuss whether predicative manner APs are complements to Pred, as it is normally the case for non-verbal predicates (cf. section 1.3.2). On the one hand, clauses that contain predicative manner adjectives with individual-denoting subjects are not instances of predication in semantic terms, given that manner adjectives denote properties of manners (or properties of events, after type-shifting), as assumed in this thesis. In particular, manner adjectives do not take their surface subjects as arguments, and the latter would not be generated in the [Spec,PredP] position like true subjects of predication (cf. section 4.2.2). On the other hand, however, some syntactic facts suggest that PredP is indeed present in the structure of sentences with predicative manner adjectives. Specifically, manner adjectives can be conjoined with nouns inside small clauses introduced by *consider*, like regular predicative adjectives:

(4.78) I consider John a promising researcher and skillful at teaching.

Since predicative nouns inside small clauses are PredPs, the fact that they can be conjoined with manner adjectives implies—due to the impossibility of coordinating unlike categories—that the latter must be PredPs as well (cf., e.g., Baker, 2003, § 2.3; see also section 1.3.2). Hence, in view of this fact, I will assume that the structure of sentences containing predicative manner adjectives is the same as suggested for regular non-verbal predication in section 1.3.2, i.e., that it contains PredP and, on top of it, VP headed by the copula, the bearer of tense/aspect and agreement morphology. The difference is only that subjects of manner adjectives are not

[63] Discussing *in*-gerunds introduced by *stupid*-type adjectives, Kertz (2006) argues that they are VP-adjuncts and not AP-adjuncts. One of her arguments for this analysis is the fact that, like other VP-modifiers, these gerunds can prepose to a sentence-initial position, as in her example in (ia):

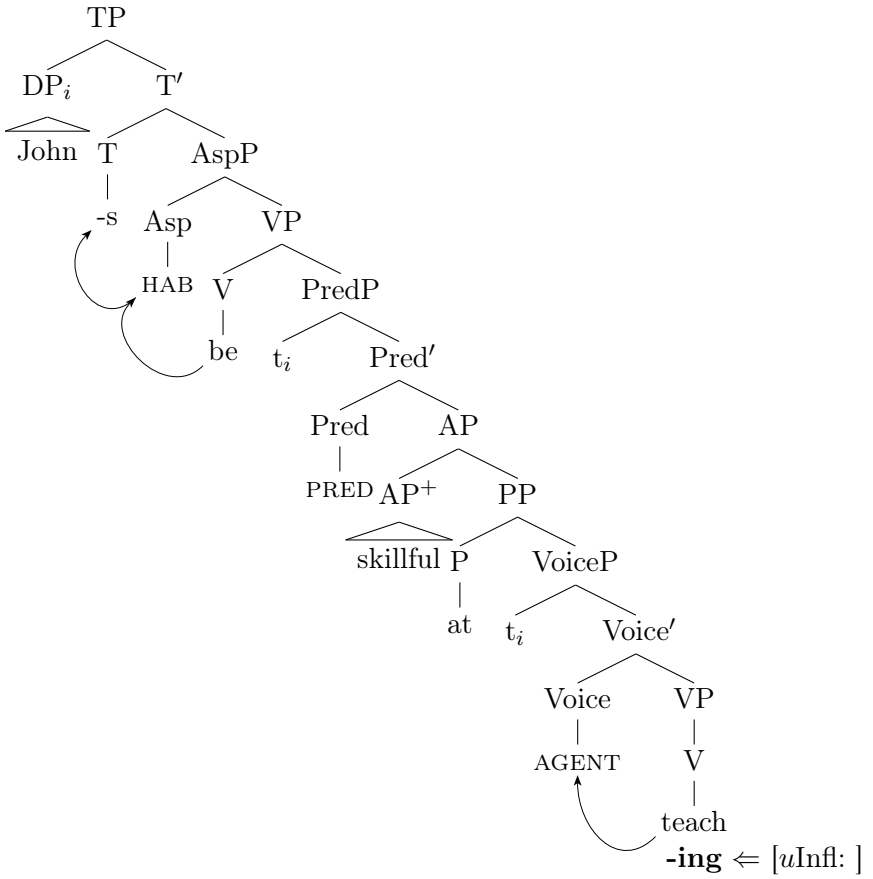
(i) a. In bringing the trial to Houston, the government was smart.
b. *At parking his car, John was skillful.

If the ability to prepose is indeed evidence for VP-adjunction, examples like in (ib) show that our *at*/*in*-gerunds adjoin not to VP, but rather to AP, as assumed above.

generated in [Spec,PredP], but rather in [Spec,VoiceP] of *at*/*in*-gerunds, from where they raise to the matrix [Spec,TP] via [Spec,PredP].[64]

Taking into account all the considerations discussed above, the structure of sentences with predicative manner adjectives is, thus, as follows:

(4.79) John is skillful at teaching.



[64]Raising via [Spec,PredP], the external arguments of *at*/*in*-gerunds may get there a second θ-role from Pred. This would account for the contrasts in (iii)–(iv) in fn. 60 in section 4.2.2, as well as for their absence in (i)–(ii) below, where there is no Pred:

(i) a. John fools Bill skillfully.
b. Bill is fooled skillfully by John.

(ii) a. John parked the car carefully.
b. The car was parked carefully by John.

Yet this analysis requires Pred to be semantically non-empty, differently from what was assumed in section 1.3.2; therefore, its implementation is left for future research.

Let us now discuss the compositional semantics of sentences containing predicative manner adjectives. In the remainder of this section, I will spell out the compositional semantics of the structure in (4.79) assuming type-shifted versions of manner adjectives as properties of events defined in section 4.1.3.2 (notice 'AP^+' in (4.79)), which is, as we will see, fairly straightforward. Subsequently, in section 4.2.3.2, also the possibility of a semantic derivation with non-shifted denotations of manner adjectives as properties of manners will be considered; we will see that it is possible as well, but requires some additional (and controversial) syntactic assumptions.

Given that *teach* in (4.79) denotes a one-place predicate and that its external argument *John* is interpreted in its base [Spec,VoiceP] position, the denotation of the VoiceP is as represented below. Further, assuming that *at* is semantically vacuous (i.e., is an identity function on properties of events), the PP receives the same denotation as well.[65]

(4.80) $[\![\text{VoiceP}]\!] = [\![\text{PP}]\!] = \lambda e\ [\mathbf{teach}(e) \wedge \mathbf{agent}(\mathbf{john})(e)]$

At this point, the unshifted version of *skillful* (type $\langle m, t\rangle$) would not be able to combine with the PP, which is an expression of type $\langle v, t\rangle$. For this reason, the semantic derivation below will proceed with the manner AP^+ in (4.81) instead, which is the result of the application of the type-shifting rule in (4.46) from properties of manners to properties of events, cf. section 4.1.3.2. The AP^+ is of type $\langle v, t\rangle$ and can, thus, combine with the PP of the same type by Predicate Modification, yielding the denotation of the AP, represented in (4.82). The denotations of the PredP and of the (higher) VP are identical to it, since both PRED and *be* are semantically vacuous, cf. section 1.3.2.

(4.81) $[\![\text{AP}^+]\!] = \lambda e.\exists m\ [\mathbf{manner}(m)(e) \wedge \exists d\ [\mathbf{skillful}(d)(m) \wedge d \geqslant \mathbf{d}_s]]\ (\rightsquigarrow \lambda m.\exists d\ [\mathbf{skillful}(d)(m) \wedge d \geqslant \mathbf{d}_s])$

(4.82) $[\![\text{AP}]\!] = [\![\text{PredP}]\!] = [\![\text{VP}]\!] = \lambda e\ [\mathbf{teach}(e) \wedge \mathbf{agent}(\mathbf{john})(e) \wedge \exists m\ [\mathbf{manner}(m)(e) \wedge \exists d\ [\mathbf{skillful}(d)(m) \wedge d \geqslant \mathbf{d}_s]]]$

Since the sentence in (4.79) is most naturally interpreted generically, i.e., as meaning that John is generally skillful at teaching, I assume that the AspP in its structure is headed by HAB, which introduces the generic

[65] Alternatively, *at* may be assigned the semantics of $\lambda Q \lambda P \lambda e\ [P(e) \wedge Q(e)]$, which expresses event identification in a more explicit way, but in the end leads to the same resulting semantics as the one derived below by using PM to combine AP^+ and PP.

event quantifier GEN in its semantics, as shown in (4.83) below (cf., e.g., Krifka et al., 1995; Ferreira, 2005; Boneh & Doron, 2010, for an in-depth discussion of the semantics of habituality). Given this denotation of HAB and the denotation of *–s*/PRES from section 1.3.1, repeated in (4.83) for convenience, the derivation of the meaning of the sentence thus proceeds as shown in (4.84)–(4.85).[66]

(4.83) a. $[\![\text{HAB}]\!] = \lambda P \lambda t.\exists \mathcal{E}\ [t \subseteq \tau(\mathcal{E}) \wedge \text{GEN} e\ [e \sqsubseteq \mathcal{E} \wedge \mathbf{C}(e)]\ [P(e)]]$

b. $[\![\text{-s}]\!] = \lambda P.\exists t\ [P(t) \wedge t \circ \mathbf{now}]$

(4.84) $[\![\text{AspP}]\!] = \lambda t.\exists \mathcal{E}\ [t \subseteq \tau(\mathcal{E}) \wedge \text{GEN} e\ [e \sqsubseteq \mathcal{E} \wedge \mathbf{C}(e)]\ [\mathbf{teach}(e) \wedge \mathbf{agent}(\mathbf{john})(e) \wedge \exists m\ [\mathbf{manner}(m)(e) \wedge \exists d\ [\mathbf{skillful}(d)(m) \wedge d \geqslant \mathbf{d}_s]]]]$

(4.85) $[\![\text{TP}]\!] = \exists t\ [\exists \mathcal{E}\ [t \subseteq \tau(\mathcal{E}) \wedge \text{GEN} e\ [e \sqsubseteq \mathcal{E} \wedge \mathbf{C}(e)]\ [\mathbf{teach}(e) \wedge \mathbf{agent}(\mathbf{john})(e) \wedge \exists m\ [\mathbf{manner}(m)(e) \wedge \exists d\ [\mathbf{skillful}(d)(m) \wedge d \geqslant \mathbf{d}_s]]]] \wedge t \circ \mathbf{now}]$

Let us take stock. Deriving the denotation of a clause that contains a predicative manner adjective with an individual-denoting subject in this way, that is, by incorporating the semantics of an *at*/*in*-gerund into the meaning composition, we have arrived at a logical form that is similar to the one we would have obtained by employing the type shift in (4.55) in section 4.2.1. Yet the crucial difference is that this logical form has been derived in a completely compositional way.[67]

Moreover, the analysis presented above has also some further advantages over the alternative type-shift approach. One of them concerns the choice of the event quantifier. According to the analysis presented above, the event whose manner is specified by the manner adjective is bound by a quantifier introduced in the semantics of the Asp head, i.e., the choice of the quantifier co-varies with the aspectual interpretation of the matrix clause, which accords with the data, cf., e.g., *John is generally skillful at teaching* vs. *John was skillful today at parking his car*. On the type-shift approach, by contrast, the event quantifier is introduced in the course of type-shifting. This implies, however, that in fact, in order to capture the

[66] Note that **C** in the restrictor of GEN is a free variable over contextually relevant sets of events (cf. Chierchia, 1995; Krifka et al., 1995; see also Ferreira, 2005).

[67] The semantic derivation with covert *at*/*in*-gerunds, as in *John is skillful*, proceeds in the same way as with overt ones; cf. section 4.2.4.1 for an example derivation with an attributive manner adjective and a covert *at*/*in*-gerund. Note also that the semantics of *John is skillful at teaching* in (4.85) is identical to the semantics that we would get for *John teaches skillfully*, cf. the derivations in section 3.2.1.

range of possible interpretations, *multiple* type-shifting rules introducing various event quantifiers need to be postulated. Thus, in addition to the type shift in (4.55), which involves existential quantification over events, we would also have to formulate similar type shifts with a generic quantifier, various adverbs of quantification, etc., rendering this analysis even less appealing.

Another advantage of the analysis presented above has to do with the thematic relation that holds between the subject of a predicative manner adjective and the event whose manner is specified by this manner adjective. The type shift in (4.55) leaves this relation underspecified ($\mathbf{\Theta}$); yet, in fact, the only θ-role possible in this case is that of agent. The formulation of the type shift can of course be modified accordingly, i.e., so as to involve specifically the agent θ-role, but this would just be a stipulation, like the type shift as a whole. By contrast, under the analysis presented above, this thematic restriction follows automatically from the composition of syntactic projections in the structure of *at*/*in*-gerunds.

Finally, it is unclear how (overt) *at*/*in*-gerunds can be integrated into the semantic composition under the type-shifting approach. In particular, type-shifted manner adjectives of type $\langle e, t\rangle$ would not be able to combine with *at*/*in*-gerunds of type $\langle v, t\rangle$. Moreover, according to the type shift in (4.55), the event whose manner is specified by the manner adjective is set to be some contextually determined event $\mathbf{E}$, which makes *at*/*in*-gerunds superfluous as the source of the event.

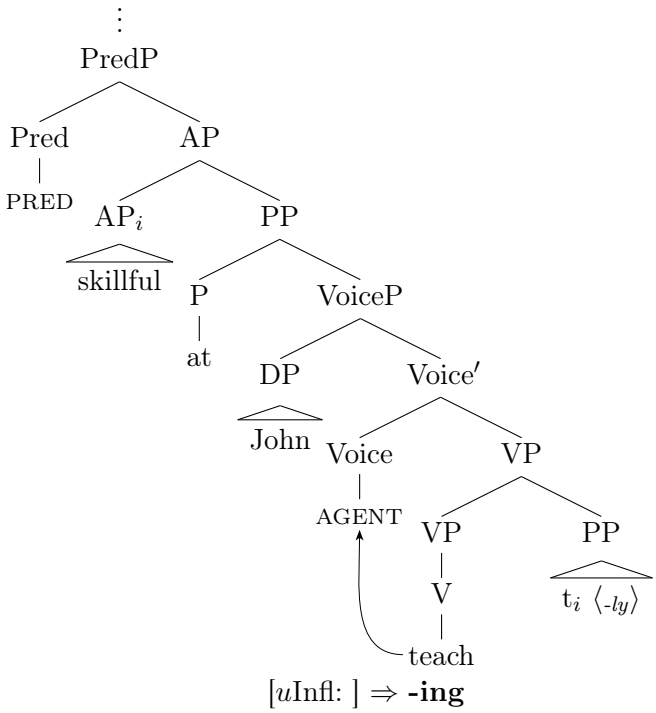
Thus, as we have seen in this section, the compositional semantics of predicational sentences with manner adjectives type-shifted to properties of events is quite straightforward. However, since this type shift is controversial (section 4.1.3.2), the following section will consider the possibility of a semantic derivation with unshifted versions of manner adjectives.

4.2.3.2 Derivation with unshifted manner AP

We have already discussed above that, given the structure in (4.79), non-type-shifted versions of manner adjectives of type $\langle m, t\rangle$ cannot combine with *at*/*in*-gerunds, which are of type $\langle v, t\rangle$. A type mismatch would not arise in this situation, however, if manner adjectives are in fact not base-generated as sisters to *at*/*in*-gerunds and, hence, do not directly combine with them. Note in this connection that in order for manner adjectives as properties of manners to be able to enter into the semantic composition, it is necessary that the manner function, which links manners to events, and the manner quantifier, which binds the manner variable, are present

in the logical form. It may therefore be assumed that manner adjectives, which are sisters to *at*/*in*-gerunds at the surface structure, are generated inside manner PPs—whose semantics contains both the manner function and the quantifier over manners, and that these manner PPs are adjuncts to the VP in the structure of *at*/*in*-gerunds, as shown below.[68,69]

(4.86) John is skillful at teaching.



Given this syntax, the semantic derivation with not type-shifted manner adjectives is entirely straightforward (the compositional semantics of the manner PP is as described in section 3.2.1, and, other than that, the derivation proceeds essentially as for (4.79) from section 4.2.3.1, yielding the same resulting semantics—for reasons of space, I will not spell it out in full here). However, the core element of this syntax, AP-movement, is potentially problematic for several reasons. First, it is an instance of non-

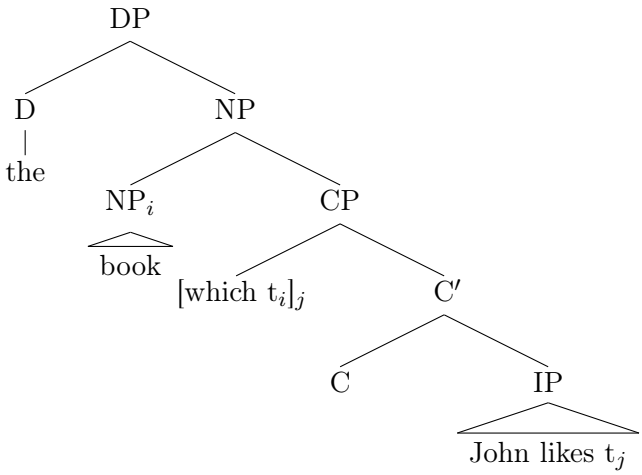
[68]See section 4.1.3.1 for analogous AP-movement out of manner PP in the structure of event nouns. Note also that, if *at*/*in*-gerunds are shown to be complements, rather than adjuncts, of manner adjectives, it may be assumed instead of AP-movement that the adjective undergoes projecting head movement (cf., e.g., Donati, 2006).

[69]The projections above PredP in (4.86), left out for reasons of space, are the same as in (4.79).

standard *projecting* movement, i.e., movement in the course of which the moved constituent projects, rather than the target of movement. Second, it is not clear what triggers this movement.

Note, however, that even though projecting movement is not a widely accepted syntactic device (e.g., it is disallowed in Chomsky, 1995, § 4.4.2), it is not completely rejected across the board, either. Thus, for example, Bhatt (1999, 2002) argues for the possibility of this type of movement in connection with his version of the head-raising analysis of relative clauses illustrated below (see also Iatridou et al., 2001; Donati, 2006; notice that the possibility of projecting movement is recognized in Chomsky, 2008).

(4.87) the book which John likes (Bhatt, 2002, 74)



The manner AP in (4.86) behaves, in general, in a similar way to the NP in Bhatt's analysis: It moves out of a constituent (a PP) which then adjoins to it. Therefore, let us assume for now that projecting movement is, in principle, possible. The question is then what triggers it in the case of manner APs. With respect to this issue, it may be assumed, following Bhatt (1999, 2002), that the driving force of this movement are the syntactic selectional restrictions of the immediately dominating head, i.e., in our case, the ability of Pred to take an AP but not a PP as complement (cf. section 3.1.2.3 for some discussion concerning the inability of PPs to serve as complements to Pred).

Yet, even if projecting movement of this sort is sometimes considered to be possible, it is still a rather unorthodox device, with potentially far-reaching implications for syntactic theory. For this reason, I will take the alternative analysis in terms of type-shifting (sections 4.1.3.2 and 4.2.3.1)

to be the preferred option for now—assuming, however, that future work might bring up further arguments for or against it.

Having discussed the syntax and the compositional semantics of sentences containing predicative manner adjectives with individual-denoting subjects, let us turn, in the next section, to the analysis of their attributive counterparts.

4.2.4 Attributive position

4.2.4.1 APs with complements or adjuncts

In accordance with the conclusions reached in section 4.2.1, also manner APs that serve as attributive modifiers of individual nouns must contain *at*/*in*-gerunds—either covertly (cf. *a skillful teacher*) or overtly, in which case the head-final constraint requires the AP to appear post-nominally, as discussed in section 1.3.3 (cf. *a teacher skillful at explaining*). Yet, we have seen in the semantic derivation in section 4.2.3 that, independently of whether type-shifted or not type-shifted versions of manner adjectives are taken, manner APs containing an *at*/*in*-gerund are of type $\langle v, t\rangle$, see (4.82) above. This implies that they cannot be analyzed as NP-adjuncts, as they would not be able to combine semantically with their individual-denoting head nouns of type $\langle e, t\rangle$. And, in fact, post-nominal adjectives with complements or adjuncts have been argued by Cinque (2010, § 5.2.1) to be reduced relative clauses containing a predicational structure, rather than specifiers (i.e., adjuncts in this thesis, cf. section 1.3.3). These arguments hold also for manner adjectives modifying individual nouns, since they have (overt or covert) *at*/*in*-gerunds as their adjuncts; let us therefore briefly discuss them.[70]

First, Cinque brings up the observation from Sadler & Arnold (1994) that a pre-nominal adjective can take scope over another pre-nominal adjective (to its right), but not a post-nominal adjective with a complement or adjunct, as the following examples illustrate:

(4.88) a. a fake rotten antique
b. a fake antique rotten with age

He claims that, while (4.88a) may be interpreted as saying that what is fake is the rotten status of the antique, the phrase in (4.88b) can only

[70] Notice that post-nominal adjectives *without* complements/adjuncts in English are also sometimes taken to have a relative clause source (cf., e.g., Bolinger, 1967; Larson & Marušič, 2004; Cinque, 2010, for a discussion).

mean that the antique is fake, but genuinely rotten with age, and argues that this follows if *rotten with age* is a reduced relative clause, which can take scope over *fake*, differently from pre-nominal *rotten*.

Second, Cinque suggests that the approach to English post-nominal adjectives with complements or adjuncts in terms of reduced relatives is also supported by the following observation made in Williams (1994, 92) regarding the interpretation of adjectives like *alleged*. When used in pre-nominal position, as in (4.89a), *alleged* is interpreted "non-intersectively" with respect to the modified noun, that is, it expresses uncertainty as to whether the referent of the DP is a murderer; note that on this interpretation *alleged* cannot be used predicatively. By contrast, when *alleged* is placed post-nominally due to the presence of an (infinitival) complement, as in (4.89b), it becomes "intersective" with respect to the noun it modifies; what is uncertain in this case is only the proposition denoted by the infinitive. Importantly, a relative clause containing *alleged* together with its complement in the predicative position would receive this interpretation as well. Thus, with respect to its interpretation, post-nominal *alleged* patterns with its predicative counterpart in a relative clause, rather than with pre-nominal *alleged*.

(4.89) a. The alleged murderer was deported.
b. The murderer alleged to have killed his own parents was deported.

Third, Cinque observes that *attributive-only* adjectives cannot occur post-nominally even if they are followed by a complement or adjunct, as his examples in (4.90) show. Again, this follows if post-nominal adjectives are reduced relative clauses with the adjective occupying the predicative position.

(4.90) a. *What is their reason main in importance?
(*cf.* What is their main reason?)
b. *He is a drinker heavier than his father.
(*cf.* He is a heavy drinker.)
c. *The winner sure from every possible viewpoint is John.
(*cf.* The sure winner is John.)

The facts cited above thus show that adjectives with complements or adjuncts are felicitous in post-nominal position only if they are felicitous also in predicative position and that—if there is difference in interpretation—such post-nominal adjectives are interpreted like their predicative,

and not pre-nominal, counterparts. Therefore, I will assume with Cinque (2010) that English post-nominal adjectives with complements/adjuncts, including manner adjectives with *at*/*in*-gerunds as adjuncts, originate in the predicative position inside reduced relative clauses. Furthermore, also manner adjectives that have covert *at*/*in*-gerunds (and are thus pre- and not post-nominal; cf. *a skillful teacher*) will be analyzed in the same way in this thesis, i.e., in terms of (preposed) reduced relative clauses, rather than AP-adjunction. In this I again follow Cinque (2010, § 5.4), who also assumes that the pre-nominal position in English is available for reduced (but not full) relative clauses, based on the data in (4.91) below. In particular, he argues that, since the pre-nominal participles in the examples in (4.91) can be modified by *(very) much*—which is a verbal and not adjectival modifier, such participles are verbal and originate inside reduced relative clauses.[71]

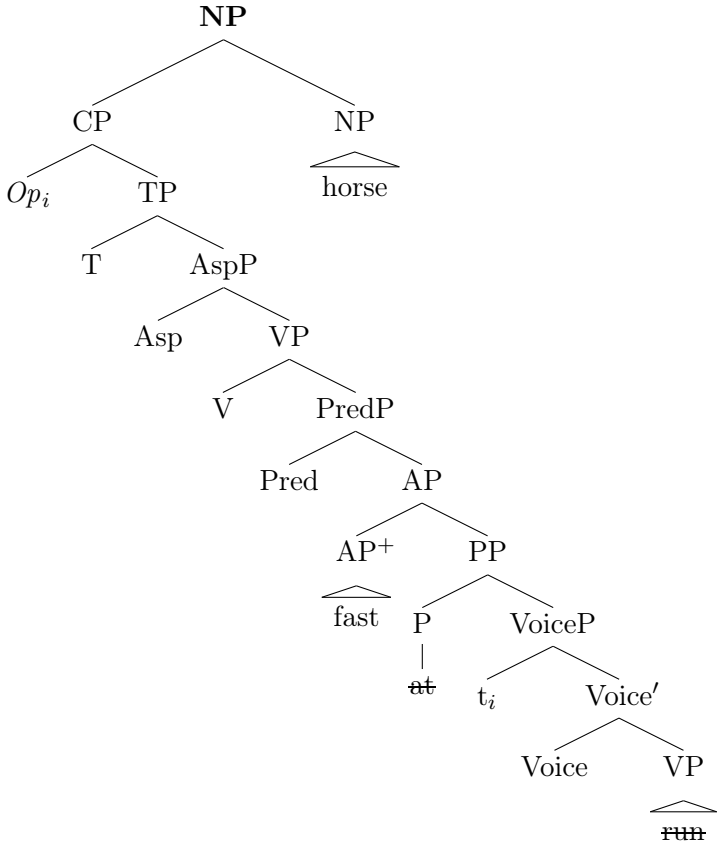
(4.91) a. a very much respected scholar
b. a very much debated issue
c. a very much appreciated service
d. the much talked about new show

Hence, the analysis of manner adjectives that attributively modify individual nouns essentially comes down to their analysis in the predicative position, presented in section 4.2.3 (which is in fact the reason why predicative manner adjectives have been addressed first). The structure of an NP that contains an individual-denoting noun and an attributive manner adjective with an unpronounced *at*/*in*-gerund is, then, as shown in (4.92) for *fast horse* with *at running* as non-overt material (any other contextually determined gerund is of course possible as an adjunct of *fast* as well). Note at this point that I am adopting the head-external analysis of relative clauses (Chomsky, 1977; Jackendoff, 1977; see also, e.g., Bhatt, 2002,

[71] English pre-nominal adjectives are thus assumed in this thesis to have two different sources: the adjunction position (for adjectives without complements or adjuncts) and the predicate position in reduced relative clauses (for adjectives with covert complements or adjuncts); i.e., the approach taken in this thesis is a variant of a "mixed" analysis of the attributive position. For other mixed analyses along similar lines, see, e.g., Sproat & Shih (1991); Demonte (1999); Alexiadou (2001a); Cinque (2010). Also, see Kayne (1994) for an analysis whereby *all* attributive adjectives, both pre-nominal and post-nominal ones, are derived from reduced relative clauses with the adjective in the predicative position (this analysis has the advantage of bringing the two positions of adjectives to a single source, but is problematic insofar as not all adjectives can be used predicatively; cf. the discussion in Alexiadou & Wilder, 1998; Alexiadou, 2001a; Pysz, 2006).

for an overview of alternative analyses), according to which the head NP originates outside of the relative clause; it is a null relative operator (*Op*) that originates in the gap position inside the relative clause, out of which it moves to [Spec,CP].[72] The reduced relative in (4.92) can *left*-adjoin to its head noun, as it does not contain any overt non-head-final material.[73]

(4.92) fast ~~at running~~ horse



Given that the VoiceP, AspP, and TP in the structure of the relative clause CP in (4.92) above are headed by AGENT, HAB, and PRES respec-

[72] The relative operator in (4.92) raises to [Spec,CP] via [Spec,PredP] and [Spec,TP] (see (4.79)); these specifier positions are just not shown in (4.92) for reasons of space.

[73] To be more precise, what does not contain overt non-head-final material in (4.92) is the AP, the CP itself is of course non-head-final. The formulation of the head-final constraint thus probably needs to be adjusted accordingly, so as to allow pre-nominal reduced relative clauses like in (4.91). For instance, it may be restated as saying that only phrases with *lexical* heads in the structure of pre-modifiers must be head-final.

tively (which accounts for the most natural interpretation of *fast horse*), and that the type-shifted denotation of the manner adjective (i.e., AP^{+}) is used, the semantic derivation up to TP proceeds basically in the same way as discussed for (4.79), cf. section 4.2.3.1. The difference is only that the individual argument position of **agent** is now filled by the denotation of the trace left by the movement of the relative operator, $g(i)$.

(4.93) $[\![\text{VoiceP}]\!]^g = \lambda e\ [\mathbf{run}(e) \wedge \mathbf{agent}(g(i))(e)]$

(4.94) $[\![\text{AP}]\!]^g = \lambda e\ [\mathbf{run}(e) \wedge \mathbf{agent}(g(i))(e) \wedge \exists m\ [\mathbf{manner}(m)(e) \wedge \exists d\ [\mathbf{fast}(d)(m) \wedge d \gg \mathbf{d}_s]]]$

(4.95) $[\![\text{AspP}]\!]^g = \lambda t.\exists \mathcal{E}\ [t \subseteq \tau(\mathcal{E}) \wedge \text{GEN}e\ [e \sqsubseteq \mathcal{E} \wedge \mathbf{C}(e)]\ [\mathbf{run}(e) \wedge \mathbf{agent}(g(i))(e) \wedge \exists m\ [\mathbf{manner}(m)(e) \wedge \exists d\ [\mathbf{fast}(d)(m) \wedge d \gg \mathbf{d}_s]]]]$

(4.96) $[\![\text{TP}]\!]^g = \exists t\ [\exists \mathcal{E}\ [t \subseteq \tau(\mathcal{E}) \wedge \text{GEN}e\ [e \sqsubseteq \mathcal{E} \wedge \mathbf{C}(e)]\ [\mathbf{run}(e) \wedge \mathbf{agent}(g(i))(e) \wedge \exists m\ [\mathbf{manner}(m)(e) \wedge \exists d\ [\mathbf{fast}(d)(m) \wedge d \gg \mathbf{d}_s]]]] \wedge t \circ \mathbf{now}]$

Next, the interpretation of CP is governed by the rule of Lambda Abstraction (see section 1.3.1). As a result of its application, the individual variable introduced by the trace gets abstracted over, turning the relative clause into a predicate. Being of type $\langle e, t\rangle$, the CP can now be combined with the head NP of the same type by Predicate Modification, such that the denotation of *fast horse* is as in (4.98) below.[74]

(4.97) $[\![\text{CP}]\!]^g = \lambda x.\exists t\ [\exists \mathcal{E}\ [t \subseteq \tau(\mathcal{E}) \wedge \text{GEN}e\ [e \sqsubseteq \mathcal{E} \wedge \mathbf{C}(e)]\ [\mathbf{run}(e) \wedge \mathbf{agent}(x)(e) \wedge \exists m\ [\mathbf{manner}(m)(e) \wedge \exists d\ [\mathbf{fast}(d)(m) \wedge d \gg \mathbf{d}_s]]]] \wedge t \circ \mathbf{now}]$

(4.98) $[\![\mathbf{NP}]\!]^g = \lambda x\ [\mathbf{horse}(x) \wedge \exists t\ [\exists \mathcal{E}\ [t \subseteq \tau(\mathcal{E}) \wedge \text{GEN}e\ [e \sqsubseteq \mathcal{E} \wedge \mathbf{C}(e)]\ [\mathbf{run}(e) \wedge \mathbf{agent}(x)(e) \wedge \exists m\ [\mathbf{manner}(m)(e) \wedge \exists d\ [\mathbf{fast}(d)(m) \wedge d \gg \mathbf{d}_s]]]] \wedge t \circ \mathbf{now}]]$

Thus, *fast horse* denotes, according to this analysis, the set of entities that are horses and serve as agents in the events specified by the implicit *at*/*in*-gerund (such as running, as in (4.92)), which, in general, unfold in a fast manner. In other words, the intuitive interpretation of this phrase, which the type-shifting rule in (4.55) from section 4.2.1 can just formally

[74] I assume that relative pronouns/operators are semantically empty. Note also that the lambda-abstract, which gets adjoined below the landing site of the moved relative operator (cf. section 1.3.1), is not shown in (4.92).

describe, is accounted for by the present analysis in a completely compositional way.

Let us conclude this section by pointing out that the analysis offered above also accounts for another fact concerning manner adjectives in the context of individual-denoting nouns, mentioned in section 2.2.1. In particular, it has been noticed by Vendler (1968, 89) that manner adjectives (i.e., A_3's) cannot be conjoined with intersective adjectives (i.e., A_1's) in the attributive position, as his examples in (4.99) below show. Note that ambiguous adjectives like *beautiful* can only have an intersective reading in conjunction with intersective adjectives and a manner reading in conjunction with manner adjectives, while non-ambiguous manner adjectives like *slow* are infelicitous in conjunction with intersective adjectives altogether.

(4.99) a. She is a blonde and beautiful dancer.
b. She is a slow and beautiful dancer.
c. *She is a blonde and slow dancer. (Vendler, 1968, 89)

This fact follows on the analysis outlined above insofar as, according to it, attributive manner adjectives are reduced relative clauses, i.e., CPs, whereas attributive intersective adjectives are regular APs. The impossibility of conjoining them is thus a manifestation of the constraint against coordinating unlike categories, which is sometimes referred to as the Law of the Coordination of Likes (LCL; Williams, 1981).[75]

[75]Note, however, that in some cases it appears to be possible to conjoin an intersective and a manner adjective, cf. *a young and skillful dancer*, *a tall and fast horse*, etc. Yet in fact it is not clear that such examples involve true coordinate structure, which is subject to the parallelism requirement (incl. the LCL), since the conjuncts seem to be semantically related, with *and* being interpreted causally (Goldsmith, 1985; Lakoff, 1986). Asymmetry is also suggested by the fact that the order of the conjuncts cannot be reversed and that phrases like *a short and fast horse* are not very good.

Furthermore, it has also been observed that in stacking a manner adjective cannot be followed by an intersective adjective, as the examples in (i) from Larson & Marušič (2004) show (but see Vendler, 1968, 132–133, for examples like *brave blond man*):

(i) a. Olga is a *blonde beautiful* dancer. intersective+intersective
intersective+non-intersective

b. Olga is a *beautiful blonde* dancer. intersective+intersective
*non-intersective+intersective

These data are not accounted for by the analysis presented above; notice, however, that the order of attributive adjectives is likely to be governed by cognitive, semantic, prosodic, but not syntactic principles (see the discussion in section 1.3.3).

Note, furthermore, that the present analysis also accounts for the impossibility of conjoining manner adjectives with intersective adjectives in the predicative position, illustrated in (4.100) below.

(4.100) *This dancer is blonde and slow.

In particular, individual-denoting subjects of predicative manner adjectives have been argued in section 4.2.2 to be generated AP-internally, namely, in the [Spec,VoiceP] position inside *at*/*in*-gerunds, which makes them different from the subjects of regular intersective adjectives. Therefore, even though the conjunction of *blonde* and *slow* in (4.100) does not violate the LCL (being a coordination of APs or PredPs), it violates the Coordinate Structure Constraint (CSC; Ross, 1967), which forbids movement of or out of a conjunct, since the subject of *slow*, but not of *blonde*, moves out of the AP. Moreover, note that the conjunction of predicative *blonde* and *slow* is also impossible from a semantic point of view, as the AP/PredP of a manner adjective is of type $\langle v, t\rangle$ (see (4.82)), while that of an intersective adjective is of type $\langle e, t\rangle$.

Thus, this section has provided an analysis of attributive manner adjectives that modify individual-denoting nouns. In concluding the overall discussion of manner adjectives in the context of individual nouns, let us in the next section briefly consider the special case where the head noun of a manner adjective is deverbal, in particular, an *–er* nominal, since it played a prominent role in the previous analyses of manner adjectives.

4.2.4.2 Modification of *–er* nominals

As we have already discussed at length in section 2.2.2.3, manner adjectives analyzed as properties of events (cf., e.g., the type-shifting analysis from section 4.1.3.2) cannot access the event argument of the base verbs of participant-denoting *–er* nouns under standard syntactic and semantic assumptions. In fact, this also holds if manner adjectives are analyzed in terms of properties of manners, as has been done throughout this thesis; let us see why.

Within the framework developed in this thesis, an analysis according to which manner adjectives as properties of manners can access the event argument of the base verbs of *–er* nouns presupposes the presence in the logical form of the manner function (which links manners to events) and of the manner quantifier (which binds off the manner variable). In other words, such an analysis requires that the entire manner PP is present as

an adjunct to the base verb of the *–er* noun, because the P and D heads in its structure introduce in their semantics the manner function and the manner quantifier (the manner AP may then be assumed to move out of the manner PP as discussed in section 4.1.3.1 for event nouns). Yet, differently from event nouns, *–er* nominals do not allow overt post-nominal manner adverb(ial)s, as the examples in (4.101) illustrate, which should be the case if manner PPs could adjoin to their base verbs.

(4.101) a. *the finder of the wallet so quickly
(Baker & Vinokurova, 2009, 519)
b. *the inducer of protein growth with a new technique
(Rappaport Hovav & Levin, 1992, 142)

The fact that manner PPs cannot modify the base verbs of *–er* nominals thus implies that their event argument cannot be accessed by manner adjectives analyzed as properties of manners, given standard syntactic assumptions. Therefore, *–er* nominals, and deverbal individual nouns in general, do not represent a special case from non-deverbal nouns with respect to modification by manner adjectives—independently of whether the latter are assumed to denote properties of manners or of events. The relevant event is introduced in both cases in the semantic structure of an *at/in*-gerund and not in that of the modified noun. Deverbal nouns may possibly be special only in the following sense when modified by manner adjectives: Since the event described by the base verb of a deverbal head noun of a manner adjective is made salient through the use of this noun, the event provided by an *at/in*-gerund is likely to be the same event. In fact, this is probably also the reason why *at/in*-gerunds tend to remain implicit in the context of deverbal modified nouns (i.e., a phrase such as *skillful teacher* is likely to be interpreted as 'teacher skillful at teaching' in most contexts, with the gerund *at teaching* being surface-deleted).

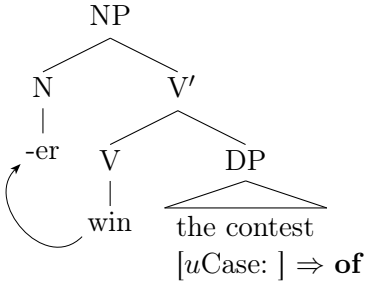
Note further that the incompatibility of *–er* nouns with post-nominal manner adverb(ial)s, illustrated in (4.101) above, has important implications with respect to the morphosyntactic structure of this type of nominalizations. In particular, given that manner adverbials are VP-adjuncts (as assumed also in this thesis, see section 3.3.2), their inability to serve as post-nominal modifiers of *–er* nouns indicates the absence of a VP in the structure of the latter. Hence, *–er* nouns must be nominalizations of V, or rather V′, given their ability to have *of*-complements. This conclusion is corroborated by the following fact. If the base verbs of *–er* nouns do not even project to a VP, higher verbal functional projections should

be absent as well, which seems to be the case: The fact that the complements of *–er* nouns are not assigned accusative Case, but are introduced by the last-resort Case-marker *of*, implies the absence of VoiceP in their structure (on the assumption that direct objects receive accusative Case from Voice, cf. section 1.3.1), while the inability of *–er* nominals to take aspectual auxiliaries, modals, and verbal negation (see (4.102)) suggests the absence of such higher FPs as AspP, PerfP, ModP, and NegP.[76,77]

(4.102) a. *the haver won of the contest
b. *the beer able to win of the contest
c. *the not winner of the contest

Accordingly, the internal structure of an *–er* nominal with a complement is as shown below for *winner of the contest*.

(4.103)



[76]See in this connection van Hout & Roeper (1998), who analyze *–er* nouns with a "drifted interpretation" (e.g., *sinker*) and *–er* nouns with incorporated direct objects (e.g., *lawn-mower*) as nominalizations of V and V′, respectively. For other views concerning the height of attachment of the suffix *–er*, see, e.g., Ntelitheos (2006); Baker & Vinokurova (2009); Alexiadou & Schäfer (2010).

[77]If manner adverb(ial)s are VoiceP-adjuncts (see the discussion in fn. 61 in section 4.2.2), *–er* nominals may be analyzed as nominalizations of VP. However, some other facts still suggest the absence of a VP in their structure; for instance, unlike deverbal event nouns (cf. Fu et al., 2001), *–er* nominals do not license *do so* anaphora:

(i) *The mower of the lawn was prevented from doing so.

On the other hand, if *–er* nominals are nominalizations of V or V′, it is surprising that they can take (post-nominal) temporal adverbials, as the examples below show:

(ii) a. the winner of the race yesterday (Baker & Vinokurova, 2009)
b. the destroyer of the city in 1735 (Winter & Zwarts, 2012)

In fact, however, these adverbials are likely to be NP-adjuncts, since they can also modify non-deverbal nouns (cf. *the victim yesterday* from Baker & Vinokurova, 2009, fn. 5; see also the data in Payne et al., 2010). Note that this implies that nouns have an additional time argument (in this connection, cf. fn. 17 in section 1.3.2).

Finally, let us also briefly consider the compositional semantics of *–er* nominalizations. The suffix *–er* may be assigned the semantics along the lines of (4.104) below. Note that it is underspecified both with respect to the event quantifier $\mathcal{Q}$ and the thematic role $\mathbf{\Theta}$ which the referent of the *–er* noun plays in the event denoted by its base verb. As far as the event quantifier $\mathcal{Q}$ is concerned, see, e.g., Alexeyenko (2012a) for arguments as to why it should not be restricted to the generic quantifier, as commonly assumed (e.g., Larson, 1998; Egg, 2008; Baker & Vinokurova, 2009), but can be the existential quantifier as well. And regarding the thematic role $\mathbf{\Theta}$, I follow Ryder (1999) and Lieber (2004), among others, in allowing it to be any θ-role and not only agent or instrument, contra what is known as the External Argument Generalization (Fabb, 1984; Keyser & Roeper, 1984; Burzio, 1986; Rappaport Hovav & Levin, 1992).

(4.104) $[\![\text{-er}]\!] = \lambda P \lambda x.\mathcal{Q}e\ [\mathbf{\Theta}(x)(e)]\ [P(e)]$

Given this semantics of the suffix *–er*, the denotation of the NP *winner of the contest* in (4.103) is as below, with the existential quantifier in place of $\mathcal{Q}$ and **agent** in place of $\mathbf{\Theta}$, which accounts for the most natural interpretation of this phrase.

(4.105) $[\![\text{NP}]\!] = \lambda x.\exists e\ [\mathbf{agent}(x)(e) \wedge \mathbf{win}(\iota y.\mathbf{contest}(y))(e)]$

Thus, being of type $\langle e, t\rangle$, NPs headed by *–er* nominals combine with attributive CPs containing manner adjectives in exactly the same way as has been described earlier with respect to non-deverbal individual nouns.

4.3 Summary

This chapter has analyzed the syntax and semantics of manner modification of event and individual nominals. Regarding event nouns, it has first addressed the question of why they allow post-nominal but not pre-nominal manner adverbs, by examining their internal structure in comparison with that of POSS-*ing* and ACC-*ing* gerundive forms. It has been shown that, unlike these types of gerunds, event nouns are VP-nominalizations, which do not contain higher verbal projections. This implies that manner adverbs can (right-)adjoin to the VP in their structure, which yields their post-nominal placement, but cannot move from there to the [Spec,AspP] position, which has been identified in chapter 3 as the locus of pre-modifying manner adverbs, and this explains why event nominals cannot take

pre-nominal manner adverbs. The table below summarizes the data that have been used in this chapter as evidence for the presence or absence of various verbal and nominal projections in the structure of diverse forms, including event nominalizations.

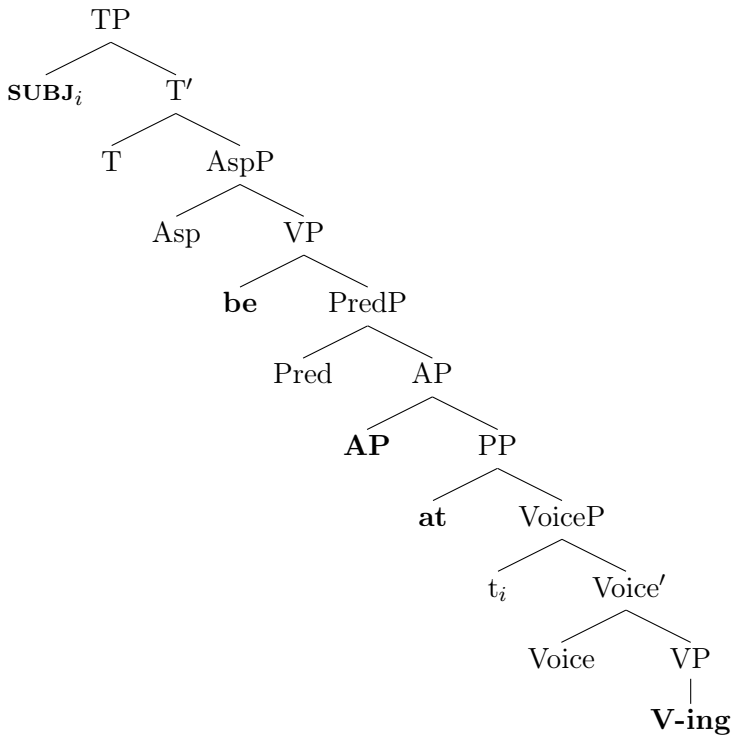
CP	presence of a complementizer (*for*, *that*)
	short *wh*-movement (indirect questions)
TP	an overt subject (lexical or expletive)
	compatibility with sentential adverbs
	independent tense specification
NegP	possibility of verbal negation
ModP	compatibility with modals
AspP/PerfP	presence of aspectual auxiliaries
VoiceP	accusative on the direct object
VP	compatibility with VP-adverb(ial)s
DP	presence of a determiner
NumP	ability to pluralize
NP	modification by adjectives

Next, this chapter has turned to the question of how event nouns semantically combine with manner adjectives, given that the former denote properties of events (type $\langle v, t\rangle$), while the latter—properties of manners (type $\langle m, t\rangle$), and, thus, direct semantic composition is not possible. Two ways to resolve this mismatch have been considered, a syntactic one and a semantic one. On the one hand, it may be assumed that (pre-nominal) manner adjectives are not base-generated as adjuncts to event nouns and thus do not directly combine with them semantically, but rather move to this position out of the structure of post-nominal manner adverbs, where they enter the semantic composition in a straightforward fashion. On the other hand, it may be assumed that in the presence of event nouns manner adjectives undergo a type shift to properties of events, which enables semantic composition, keeping the syntax close to surface structure. The chapter has discussed arguments for and against these two approaches.

Regarding adjectival manner modification of individual nominals, the central question that must be addressed concerns the source of the modified event. It has already been shown in chapter 2 that the relevant event cannot come from the semantic structure of modified nouns. In turn, this chapter has presented arguments that it is contributed by the semantics of (overt or covert) *at*/*in*-gerunds. Thus, the internal structure of *at*/*in*-gerunds has been considered; it has been shown that they contain verbal

projections up to VoiceP and lack nominal layers. The presence of VoiceP implies that the external argument is licensed in its specifier position; yet it cannot receive Case inside the gerund. It has therefore been suggested that individual-denoting subjects of predicative manner adjectives are in fact generated in [Spec,VoiceP] of *at*/*in*-gerunds, but raise to the matrix subject position for reasons of Case, as shown below.

(4.106)



This analysis allows a straightforward semantic composition, because the subjects of predicate manner adjectives are generated and interpreted elsewhere than in their surface position, in which they would not be able to combine with manner adjectives. Furthermore, it also accounts for the properties of manner adjectives in the context of individual nouns which have been observed in chapter 2, including substitution failure, interpretative variability, and the impossibility of coordination with 'intersective' adjectives.

Finally, manner adjectives that modify individual nouns attributively have been argued to be reduced relative clauses with the adjective in the predicate position, rather than AP-adjuncts to NP. Hence, their analysis essentially comes down to the analysis of predicative manner adjectives.

CHAPTER 5

Conclusion

The present thesis has been concerned with the syntax and semantics of adjectival and adverbial manner modification. The main challenge which manner adjectives pose for semantic analysis has to do with the fact that they can occur with nouns of different semantic types, in particular, with manner, event, and individual nouns, cf. (5.1), as well as in the structure of manner adverb(ial)s, cf. (5.2).

(5.1) a. The way John drives
b. John's driving
c. This driver
} is careful.

(5.2) John drives carefully/in a careful way.

The aim of this thesis has been to develop a theory of manner modification that (i) accounts for the possibility for manner adjectives to occur with manner, event, and individual nouns, while keeping their semantics constant across these uses, and (ii) establishes the semantic relation that holds between manner adjectives and manner adverbs.

Chapter 2 has provided an overview of analyses of the semantics of manner adjectives and manner adverbs. It has first presented M. Siegel's (1976) theory of manner adjectives as intensional predicate modifiers and shown its inadequacies and shortcomings. Next, it has discussed a family of analyses which assume that, rather than being modifiers of intensions,

manner adjectives are modifiers of implicit events that are present in the semantics (Croft, 1984; Larson, 1998; Egg, 2008; Winter & Zwarts, 2012; Pustejovsky, 1995; Asher, 2011). The strength of these eventive accounts is that they provide a unification in the analysis of manner adjectives and manner adverbs, since the latter are also standardly treated as predicates of events. However, what is problematic for these accounts is the issue of the source of the implicit event: While most of them hold that the event is provided by the semantics of the modified nouns of manner adjectives, this chapter has shown that this view is difficult to sustain under standard semantic and syntactic assumptions. Furthermore, it has been argued that in fact an analysis of manner adjectives in terms of event predicates falls short of accounting for a number of data and that manner adjectives should be analyzed as predicates of manners of events—and not of events themselves. Accordingly, manner adverbs have been argued to have complex semantics which incorporates a predicate of manners along with the manner function and manner quantifier. Thus, the denotations of manner adjectives and manner adverbs have been assumed in this thesis to be as represented below (ignoring gradability).

(5.3) $[\![\text{A}]\!] = \lambda m.\mathbf{A}(m)$ $\langle m, t\rangle$

(5.4) $[\![\text{A-ly}]\!] = \lambda e.\exists m\ [\mathbf{manner}(m)(e) \wedge \mathbf{A}(m)]$ $\langle v, t\rangle$

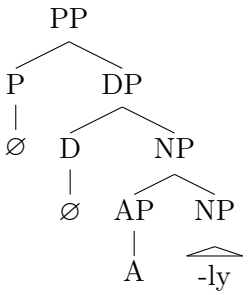
Furthermore, it has been observed throughout this chapter that manner adjectives have the following properties in the context of individual-denoting nouns:

(5.5)
- can give rise to substitution failure
- can modify "semantically bare" nouns
- can be used predicatively
- can be interpreted not relative to the head noun's meaning
- can take *at*/*in*-gerunds
- cannot be conjoined with intersective adjectives

Chapter 3 has been concerned with the internal structure, compositional semantics, and syntax of manner adverbs. First, it has been shown that there are reasons to believe that the morpheme *–ly* is in fact neither a derivational nor an inflectional suffix, as usually assumed, but rather a nominal root. Based on this, *–ly* adverbs as a whole have been argued to be null-headed compound PPs rather than members of a separate lexical category or positional variants of a single major category of adverbs and

adjectives. The morphosyntactic structure of *–ly* adverbs has, thus, been suggested to be as shown below.

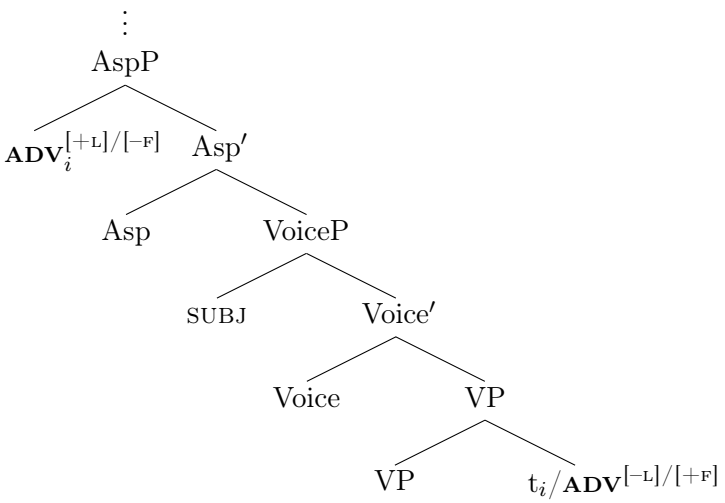
(5.6)



Moreover, given the proposed analysis of *–ly* adverbs, depicted above, the semantics of manner adverbs which has been argued for in chapter 2 becomes compositional. In particular, the manner predicate is introduced by the base adjective, the manner quantifier by the null D head, and the manner function by the null P head.

Finally, concerning the syntax of manner adverbs, it has been argued that they are base-generated as right adjuncts to VP, but can also move to [Spec,AspP] for weight or information-structural reasons, which yields their post-verbal and pre-verbal placement, respectively:

(5.7)



Outside of the adverbial domain, the analysis of manner adjectives as expressions of type $\langle m, t\rangle$ allows a straightforward semantic composition of attributive manner adjectives with manner nouns (type $\langle m, t\rangle$ as well), as in *careless courage*, and of predicative manner adjectives with DPs that

contain manner nouns (i.e., type m or the corresponding quantificational type), as in *The way in which John drives is careless.* Yet, it is not immediately clear how manner adjectives combine semantically with event and individual nouns (type $\langle v, t\rangle$ and $\langle e, t\rangle$), as in *careless driving* and *careless driver*, and DPs containing them.

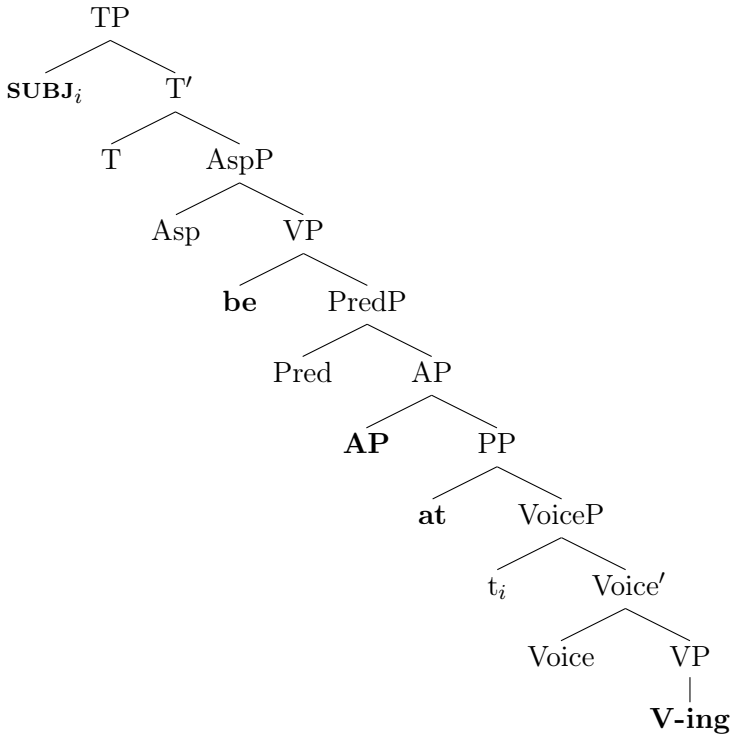
Chapter 4 has analyzed the syntax and semantics of manner modification of event and individual nouns. Regarding event nouns, it has first addressed the question of why they allow post-nominal but not pre-nominal manner adverbs, by examining their internal structure in comparison with that of POSS-*ing* and ACC-*ing* gerundive forms. It has been shown that, unlike these types of gerunds, event nouns are VP-nominalizations, which do not contain higher verbal projections. This implies that manner adverbs can (right-)adjoin to the VP in their structure, which yields their post-nominal placement, but cannot move from there to the [Spec,AspP] position, which has been identified in chapter 3 as the locus of pre-modifying manner adverbs, and this explains why event nominals cannot take pre-nominal manner adverbs.

Next, this chapter has turned to the question of how event nouns semantically combine with manner adjectives, given that the former denote properties of events (type $\langle v, t\rangle$), while the latter—properties of manners (type $\langle m, t\rangle$), and, thus, direct semantic composition is not possible. Two ways to resolve this mismatch have been considered, a syntactic one and a semantic one. On the one hand, it may be assumed that (pre-nominal) manner adjectives are not base-generated as adjuncts to event nouns and thus do not directly combine with them semantically, but rather move to this position out of the structure of post-nominal manner adverbs, where they enter the semantic composition in a straightforward fashion. On the other hand, it may be assumed that in the presence of event nouns manner adjectives undergo a type shift to properties of events, which enables semantic composition, keeping the syntax close to surface structure. The chapter discusses arguments for and against these two approaches.

In regard to adjectival manner modification of individual nouns, the central question that must be addressed concerns the source of the modified event. It has already been shown in chapter 2 that the relevant event cannot come from the semantic structure of the modified nouns. In turn, chapter 4 has presented arguments that it is introduced by the semantics of (overt or covert) *at*/*in*-gerunds. Thus, the internal structure of *at*/*in*-gerunds has been considered; it has been shown that they contain verbal projections up to VoiceP and lack nominal layers. The presence of VoiceP implies that the external argument is licensed in its specifier position; yet

it cannot receive Case inside the gerund. It has therefore been suggested that individual-denoting subjects of predicative manner adjectives are in fact generated in [Spec,VoiceP] of *at*/*in*-gerunds, but raise to the matrix subject position for reasons of Case, as shown below.

(5.8)



This analysis allows a straightforward semantic composition, because the subjects of predicate manner adjectives are generated and interpreted elsewhere than in their surface position, in which they would not be able to combine with manner adjectives. Furthermore, it also accounts for the properties of manner adjectives in the context of individual nouns which have been observed in chapter 2, including substitution failure, interpretative variability, and the impossibility of coordination with 'intersective' adjectives, cf. (5.5) above.

Finally, manner adjectives that modify individual nouns attributively have been argued to be reduced relative clauses with the adjective in the predicate position, rather than AP-adjuncts to NP. Hence, their analysis essentially comes down to the analysis of predicative manner adjectives.

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